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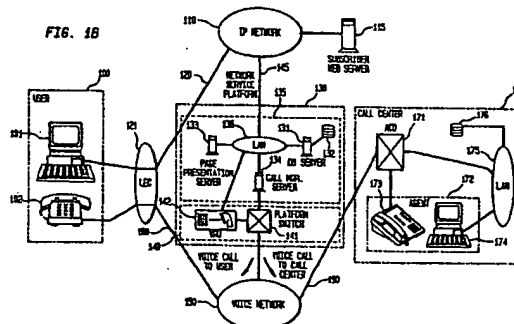
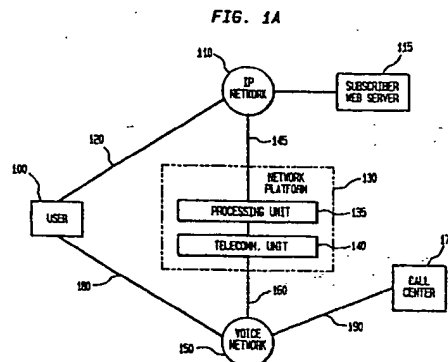
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(54) **Correlating information between internet and call center environments**

(57) Coordination of information at the network-based level between call centers connectable over a telecommunications network, such as the telephone network, and a packet network, such as the Internet, creates improved integration of and bonding between a customer's interaction with a Web site and with a call center. Information about the customer and the customer's Web interaction are delivered to the call center agent along with the call, leading to increased productivity and efficiency in call handling as well as improved call routing.

Calls may be routed to existing call centers based upon information from the Web experience, and information from the user's Web interaction is shared with the call center. Web interaction information is passed to existing call centers using known call center external control methods, such as DNIS signaling. Information about the Web experience may also be "whispered" to the call center agent, and an agent may "push" Web pages for review by the customer. As a result, customer acquisition and sales tools more powerful than a mere click-to-callback tool can be made available with a combined marketing approach using the Web and call centers.



## Description

### Technical Field

This invention relates to the Internet and to call-center environments in general and, more particularly, to a way of correlating information between a packet network, such as the Internet, and call-centers connectable over a telecommunications network, such as the telephone network.

### Background of the Invention

The Internet is a dynamic packet network consisting of millions of interconnected computers which could run several applications, such as the World Wide Web. The Internet is implemented using a large variety of connections between those millions of computers. Internet access is readily available to individuals across the globe. Various on-line service providers, such as America Online, CompuServe, Prodigy, Netcom, etc., provide client connections over the public-switched telephone network (PSTN) using modems or integrated services digital network (ISDN) adapters. These on-line service providers maintain servers on the Internet providing client access to the Internet.

The Internet's global and exponential growth is common knowledge today. The recent developments on the World Wide Web user interfaces and information navigation software such as the Netscape Web browser, coupled with a continuously growing number of public access providers, are making the Internet a fundamental component of the information age, if not the information super highway itself.

A World Wide Web site on the Internet typically resides on a computer known as a server, which is accessed through the Internet by a user utilizing a client computer. A Web site consists of one or more Web pages comprising scripts written in Hyper Text Markup Language (HTML) and typically resides on a server compatible with HyperText Transport Protocol (HTTP, a protocol for interfacing with the Internet). Pages at a Web site are typically accessible and viewed by the user through software called a Web browser, which typically resides on the user's client computer. A Web browser such as the one by Netscape interprets Web page HTML scripts to provide a graphical user interface that allows easy access to various services over the Internet.

The client computer is capable of providing output for display of a Web page to a user, for example through a video display. Such output may take the form of at least one of textual, graphic, animation, video, audio, or virtual object media. The client computer is also capable of accepting input from a user. Such input may be provided by means such as a keyboard, a mouse, a telephone touch pad, a television remote control, and so on.

Users may browse the World Wide Web for virtually any kind of information, including information having content derived from one or more media, such as words, sounds or images. Increasingly, businesses are establishing Web sites as a means of providing information to and attracting potential customers, and Web sites are emerging as a means of transacting business. Users may locate a company's Web site by, e.g., using one of a number of existing search engines available over the Internet, or browsing other Web sites containing links to the company's Web site, or entering directly the Uniform Resource Locator (URL), which represents an "address" for the site. Typically, Web browsing takes place in the context of an interactive communication session, where the user may, for example, direct the Web browsing session by choosing to follow hypertext links found in Web sites and/or may respond to information located at various Web sites.

A vast number of businesses and other organizations, such as educational and charitable institutions, employ call centers to handle a variety of telecommunications tasks. Businesses commonly set up or employ call centers that their customers, who may be other businesses or individual consumers, may reach by dialing a toll-free "800" number. Call centers are an important means of providing information to and attracting potential customers, as well as transacting business. For example, call centers may be used for taking orders for products or services, providing customer assistance or technical support, and other sales, marketing and support activities. Call centers have found wide use in, e.g., the travel industry for handling reservations and the banking and financial service industry for account servicing.

A call center utilizes a telecommunications system that may be as simple as a single telephone manned by a single individual, or it may range from a group of agents manning a bank of telephones to an entire department or company having banks of telephones networked through private branch exchange (PBX) equipment dedicated to handling hundreds or thousands of calls. A call center may be located in a single facility with one PBX or in multiple facilities with multiple PBXs.

Call centers often employ interactive voice response (IVR) technology to, e.g., assist users in locating an available call center agent who is able to handle the user's request. A IVR system is, typically, a menu-driven system that prompts a caller to press "1" for a first option, to press "2" for a second option, and so forth, or alternatively prompts the user to enter a telephone extension, a password, an account number, or the like.

Call centers also employ Dialed Number Identification Service (DNIS) signaling techniques. DNIS signaling is a well known and understood convention which, in the call center context, typically involves passing a code to a call center along with a call representative of the telephone or communications number called; the DNIS

code may be used by the call center to further route the call where appropriate.

Call centers enable business to be transacted interactively, in real time. However, call centers typically require significant staffing to handle an expected volume of calls due to inefficiencies created by the need for agents to obtain information about the customer and the subject of the customer's inquiry.

Web sites provide another means of conducting business, albeit not in real time; Web sites also do not have the level of interaction possible with a live customer-to-agent telephone call. However, Web sites offer the ability to capture the subject of the customer's inquiry and to provide the customer with preliminary information. Web sites also enable a sales or marketing client to "prequalify" a customer -- such as determining the type of consumer and the type and level of goods or services sought by the consumer -- before further contact with the consumer takes place. That is, a Web site can be used as a means to characterize the consumer and the consumer's interest, a task not easily accomplished by current IVR systems.

As important as these mechanisms for reaching customers and transacting business are, however, today there is little relationship between the activities of people calling into call centers using "800" or other telephone numbers and the activities of people interacting with Internet-based applications using Web browsers or other Internet-related applications. Typically, a consumer browsing a Web page has no interaction with call center environments. Information collected in the Web environment is not correlated with a call coming into a call center environment, and there is no pulling of Web interaction data into the call flow.

Any relationship between call center and Internet browsing activities is, for the most part, manually coordinated. For example, a consumer using an Internet browser logged into the Internet may be viewing an HTML page from a company's Web site. While browsing the Web page, the consumer may find information regarding a product or service he or she wishes to purchase, but the Web page may not have sufficient information to satisfy the consumer's interest in the product or service. The consumer wishes to call the company for more information regarding the product they have on their page. To obtain further information about the desired product or service, the consumer may call the company's appropriate "800," or other phone number, which may be listed on the Web page, and reach a call center managed by the company. However, in the typical scenario there is no information associated with the call entering the call center regarding the consumer's interactions with the Web site and what, if any, information the consumer has viewed. The consumer must verbally inform the agent of her discoveries on the Web site or what information she might be viewing, or use other traditional call center techniques, such as automatic number identification (ANI), IVR prompts, etc., provided

by call center environments to let the call center agent understand the reason for the incoming call.

There are emerging in the marketplace applications having some limited capability of coordinating a consumer's interaction with a company's Web site to a call center environment. Such applications, like the one by Scopus Technology, provide the ability for a consumer who browses a company's Web site to initiate a call-back from a call center agent for the company by, e.g., clicking on a Web site icon or button. Other such premise-based applications include PageCall™ by Edify Corporation, WebCall by Spanlink Communications, and net.Vectoring by Genesys Labs.

According to information available at Spanlink's Web site (located at URL <http://www.spanlink.com>), "WebCall" prompts the customer for information and advises the customer when a return call is to be expected; the request for a call to the customer is transferred to a call center queue, from where an outbound call is eventually initiated. The call center agent who receives the call request also has access to customer information as well as information about what pages the customer has viewed at the Web site, through either a screen pop, text-to-speech synthesis or by whispering a URL reference number that the agent can enter; such information is, apparently, either stored at the call center or made available through interaction with the server hosting the Web site. Spanlink has also announced a service called WebCall/RS which, apparently, will incorporate its WebCall application at a remote site operated by Spanlink for use with existing call centers.

According to information available over Genesys' Web site (located at <http://www.genesyslab.com>), Genesys' net.Vectoring application ties together Genesys' telephony software, two-way real-time video conferencing and the Internet. When an Internet user clicks a button to connect to an agent, a call is connected from the agent to the user and the agent can view the Web page that a user is viewing (as well as account data and information about the user's prior interaction with the Web page). The application can also pass data for signaling to the telephone network, permitting the network to set up the call.

According to information available at Edify's Web site (located at URL <http://www.edify.com>), PageCall™ enables a call center agent to retrieve customer information and to track what Web pages at the Web site a customer has selected.

Although the above-described applications represent an improvement over the non-integration or manual integration of Web and call center experiences, certain disadvantages remain. With the possible exception of the WebCall/RS application by Spanlink, these applications are premise-based, meaning they are tied into a specific call center environment; a Web site must interact with the call center in an application-specific manner, and the call center must incorporate the technology for receiving any customer identification or other infor-

mation from the Internet. These applications also generally do not have the ability to route a call externally to any call center.

The above-identified shortcomings result in increased expense for development of integrated solutions. Web site developers need to be concerned about the particular on-premise requirements for each system. Call center environments must incorporate the capability of making call routing decisions based upon any information it receives about the customer's Web interaction.

Further, these applications do not provide bonding of Internet browsing sessions and call center sessions at the time the call request is delivered to the call center. Session bonding in this context is the process of maintaining a continued association between the customer's Web session and the call between customer and call center. Session bonding would permit, e.g., the call center agent to pass information (such as visual information in a Web page) over the Internet to the user while, at the same time, speaking with the user over a telephone connection. To the extent the above-referenced applications provide any session bonding (e.g., the Edify PageCall™ application), such bonding is accomplished only from the call center to the customer, and only with an application-specific interface at the call center -- requiring a tight coupling between call center and customer. This has a disadvantage of requiring the call center to include mechanism for controlling the interaction between telephone and Web communications. Such control mechanism is not required within the call center environment if the bonding takes place external of the call center environment.

Coordination of the Internet browsing and call center activities can enhance the capability of using existing call centers and the Internet to provide the desired marketing, sales and customer handling services. For example, judgments about initiating or routing calls could be based upon Web interaction data.

What is desired is a way to enable coordination of information at the network-based level between existing call centers and a packet network, such as the Internet, to create improved integration of and bonding between call center and Web-based communication sessions in order to increase productivity and efficiency and to enable better call routing while delivering to the call center agent information about the call and the customer along with the call. Such coordination and delivery of information related to the person's interactions with the Internet along with the routing of calls would enable existing call centers to obtain the advantages of coordinated Web interaction while using standard call center hardware and software without additional customized hardware or software.

### Summary of the Invention

The present invention enables coordination of infor-

mation at the network-based level between call centers connectable over a telecommunications network, such as the telephone network, and a packet network, such as the Internet, to create improved integration of and bonding between a customer's interaction with a Web site and with a call center. The invention provides delivery of information about the customer and the customer's Web interaction to the call center agent along with the call, leading to increased productivity and efficiency in call handling as well as improved call routing.

The present invention enables call routing to existing call centers based upon information from the Web experience, and sharing of information from the user's Web interaction with the call center. The invention works with existing call center technology using known call center external control methods, such as DNIS signaling, to pass Web interaction information to the call center. The present invention also enables information about the Web experience to be "whispered" to the call center agent, and it enables an agent to "push" Web pages for review by the customer. As a result, customer acquisition and sales tools more powerful than a mere click-to-callback tool can be made available with a combined marketing approach using the Web and call centers.

### Brief Description of the Drawings

FIG. 1A shows a high-level diagram for an illustrative network-based client-server architecture coordinating activities in the Internet and call center environments in accordance with an embodiment of the present invention.

FIG. 1B shows a detailed diagram for an illustrative network-based client-server architecture coordinating activities in the Internet and call center environments in accordance with an embodiment of the present invention.

FIG. 2 depicts the message flows between the various participating components in accordance with an embodiment of the present invention.

### Detailed Description

#### Overview

The basic operation of the present invention is initiated by a customer (also denoted as a user herein) who is engaged in a Web browsing session. The user visits a Web site associated with a subscriber. The subscriber utilizes a call center for sales and marketing activity. A Web page at the site interacts with a network-based service embodied by the present invention that results in a call between the consumer and the call center. The highlights of the invention are now briefly described below in the context of a network-based service platform implementation.

## 1. Data Passing of Web-Related Information

One or more pages in a subscriber's Web site contain "speak-to-agent" icons. A user browsing the Web site may initiate a call with an agent by clicking on one of the "speak-to-agent" icons. Each such "speak-to-agent" icon is associated, on a one-to-one basis, with data representing one or more characteristics of the Web site - user interaction, such as a subject code, a subscriber identification and, optionally, network "whisper" codes. The Web site may also gather additional characteristics of the Web site - user interaction that may be desired, such as information about the user and what the user seeks; the information could include entries by the user as well as information gleaned from the user's interaction with the Web site. All of this information provides the context of the user's Web interaction and will be referred to in the aggregate as "TAG1."

Each "speak-to-agent" icon also contains a URL that points to a network-based platform. When a user clicks on one of the "speak-to-agent" icons, the user's Web browser will initiate a transmission to the corresponding URL (a server at or associated with the platform site) requesting transmission of an HTML script for displaying a Web page, corresponding to the URL, located at the platform site. Each URL stored with the "speak-to-agent" icons is programmed so that the TAG1 information about the user's interaction with the Web site is passed to the platform by means of URL overloading. URL overloading involves using standard methods for appending the data elements to the URL as a string of parameters. Using URL overloading in this fashion allows the platform to extract the TAG1 data from the overloaded URL using known methods for extracting data from the string of parameters accompanying the URL (as the platform will have access to the parameters appended to the platform-addressed URL).

## 2. Web Context to Call Center Selection/Routing

The TAG1 data identifies the context of the user's interaction with the Web site during the user's Web session. Based upon the subscriber identity element and optionally, other TAG1 information, the platform will use the TAG1 data from the Web interaction to select an appropriate existing call center. The platform will then transform or convert the TAG1 data to a form useful for generating a call to the selected call center along with transmission of information about the user's Web interaction that can be used by the call center. The converted data and associated Web interaction information transmitted to the call center along with the call will be referred to in the aggregate as "TAG2." In one example of the conversion from TAG1 to TAG2 data, the platform accesses a database containing a network abstraction table that includes TAG1 subscriber identity and subject code elements, along with corresponding DNIS call center communications numbers. Using the subject

code and subscriber ID TAG1 elements, the platform can then obtain from the network abstraction table DNIS routing data for connecting a call to an appropriate call center using DNIS codes; use of DNIS codes takes advantage of standard DNIS-based call-routing capabilities of call centers, thus allowing the call center to further route the call using the extracted and converted Web interaction information. In addition to standard DNIS codes, other examples of TAG2 information include ANI (providing the user's telephone number), user-to-user information (UUI), network-to-user information (NUI), touch-tones -- via dual tone multiple frequency (DTMF) reception, whispering, and IP messaging.

Thus, for example, the platform can take the subscriber identity and subject code elements of TAG1 and, using a database, map these elements into a toll free telephone number representing the number for the call center and TAG2 information consisting of a unique DNIS code representative of the subject matter. The platform can then originate a call to the call center using the toll free number, with the DNIS code set according to the DNIS database. The call center can then route the call to the appropriate agent according to the DNIS code. In this way, use of TAG2 information such as a DNIS code provides a basic method of passing information corresponding to the subject matter of the Web site interaction along to the call center.

## 3. Web Context to Agent Data Passing

TAG2 information can also provide a means to pass Web interaction information along to a call center agent. For example, the optional whisper code of TAG1 identifies data from the session on the Web site to be passed to the call center agent. Thus, once the call center has routed the call to an agent and the agent answers the call, the network platform can "whisper" to the agent informing the agent of the Web context of the call and allowing the agent to associate data collected on the Web with the call. One way in which this may be accomplished is to transform the TAG1 whisper code into an audio message (e.g., a prerecorded message) which is then played over the call connection to the agent. Besides prerecorded messages, other audio messages that may be "whispered" to the agent include, for example, Web site page identifiers, or other information determined by the whisper code of TAG1. Optionally, the authority of the call center and/or the agent to receive information concerning the Web session interaction (which could include user information) could be verified before any information is delivered to the call center or to the agent.

## 4. Bonding of Voice Call and Web Data Sessions

The network-based platform coordinates and controls the "speak-to-agent" call flows. The platform cap-

tures the subject code, optional "whisper" code, and subscriber ID that are passed by the Web site through URL overloading (as described above) for use in the call flow of connecting a user with a call center agent. The platform also contains Web "welcome" pages for user entry of a callback number for the user and, optionally, other user information.

While calls to the call center and user are being set up, the platform can access a database to obtain URLs for displaying pages to the user. These pages can be informational or for advertising purposes.

Once calls are established with the user and with the call center, the platform bridges the calls, enabling user and call center agent to speak. Through the platform, the agent can also pass information along to the user while they are speaking.

### 5. Agent to Web Data Passing

The agent can send information to the user while the agent and the user are speaking. An example of transmitting information from agent to user involves a "page-push" operation, where the call center agent presents information in the form of a Web page to the user's Web browser. The user's browser would then display the Web page to the user.

The platform can enable the "page-push" function by storing Web pages in a database and sending one or more Web pages selected from the database to the user's browser. The page-push function can be executed in response to a request from the call center agent. Such a request can be transmitted from agent to call center using, e.g., touch-tone or IP messaging from the call center to the platform.

The "page push" function may be accomplished using touch-tone messaging in the following way. The agent selects one or more "pages" of information to send and presses touch tones on his/her telephone. The touch tones, corresponding to unique predefined Web pages for the particular subscriber, are received by the platform. The platform then causes the corresponding Web pages to be transmitted to the user via the user's Web session.

Note that the association between user and call center is applicable to any one of a number of potential voice communication channels, such as Plain Old Telephone Service (POTS)-to-POTS connections, Internet phone to -POTS connections, Internet phone to Internet phone connections, and other media permutations. All of these could include wired or wireless connections.

### Architecture

A high level block diagram for an architecture implementing the present invention is shown in FIG. 1A. With reference to FIG. 1, the system is based upon a client-server architecture. The client (also denoted as "user" herein) 100 communicates with Internet 110 through

communications link 120, which may include one or more of a number of known channels, e.g., a private connection, the public switched telephone network, a local area network (LAN) connection, a Serial Line Internet Protocol (SLIP) or Point-to-Point Protocol (PPP) connection over a modem or over an ISDN port. The communications between user 100 and Internet 110 may be made through an Internet service provider. The communications link 120 preferably includes an IP-compatible interface. Thus, user 100 may be linked through communications link 120 to Internet 110 in an interactive communications session, such as Web browsing.

Information about a company subscribing to the Web - call center integration service of the present invention is stored in a Web site locatable over Internet 110 using a Web browser and standard URL designation. This Web site associated with the subscriber is maintained on Web server 115.

The Web - call center integration network service platform 130 has a processor unit 135 embodying the typical features of a computer system, i.e., a processor, memory, and one or more communication ports, etc. Platform 130 also has a telecommunications unit 140 which performs functions typically found in existing telecommunications equipment, such as, for example, network switching capability for initiating and routing calls on a telecommunications network (e.g., the PSTN), and interactive voice response capability which includes, e.g., handling of text-to-speech transformation and DTMF recognition (used for detecting keys pressed on a touch-tone keypad).

Network service platform 130 communicates with Internet 110 over communications link 145, which may include one or more of the known channels, e.g., a private connection, the public switched telephone network, a local area network (LAN) connection, a Serial Line Internet Protocol (SLIP) or Point-to-Point Protocol (PPP) connection over a modem or over an ISDN port. Communications link 145, like link 120, preferably includes an IP-compatible interface.

Network service platform 130 is also connected to voice communications network 150 over telecommunications link 160. Link 160 would typically include a network telecommunications interface, such as T1 line. Voice telecommunications network 150 would typically include a long distance telephone carrier network on the PSTN and is used to establish a telephone connection between the user 100 and a call center 170 which is associated with the subscriber. Voice network 150 is connected to user 100 via telecommunications link 180, and to call center 170 via telecommunications link 190. Telecommunications links 180 and 190 would each typically include a telecommunications network, such as a private telephone network or the PSTN.

FIG. 1B provides a more detailed depiction of the architecture, shown in FIG. 1A, for one embodiment of the present invention. User 100 has communications

apparatus typically comprising a computer-based workstation 101, such as a personal computer, for interacting with the Internet and a voice communications device 102 (e.g., a telephone) for interacting with a voice communications network, such as the PSTN. A user at workstation 101 may interact with Internet 110 through communications link 120, which may include the public switched telephone network routed through a local exchange carrier (LEC) 121.

As shown in FIG. 1B, the processing unit 135 contained within platform 130 may comprise one or more servers, such as: database server 131, which controls database 132; page presentation server 133 for storing and coordinating the presentation of Web pages to user 100; and call manager server 134 for coordinating and controlling the operations of network services platform 130. Servers 131, 133 and 134 are connected to each other over local area network (LAN) 136. LAN 136 connects to Internet 110 through an IP-compatible connection 145, such as PPP or SLIP, etc. Database 132, which could be a single database or a set of multiple databases, contains data for selecting a call center and determining "TAG2" Web interaction information to accompany the call.

Telecommunications unit 140 of platform 130 comprises a telecommunications switching device 141, which is compatible with the PSTN, and a voice response unit (VRU) 142, which may also be connected to LAN 136. Switch 141 handles the function of establishing calls to call center 170 and to user 100 over voice network 150. Typically, a call may be established by instructing telecommunications switch 141 to place a call to a communications number, which communications number could, e.g., correspond to a DNIS code.

VRU 142 performs the task of text-to-speech conversion which enables the whispering function. VRU 142 may also perform other functions typically performed by telecommunications equipment, such as playback of prerecorded messages (which may be intermixed with the whisper-coded speech and played to the call center agent) and interception and conversion of DTMF signals sent by the call center agent to the platform. Switch 141 may be one of a number of switching devices known in the telecommunications industry; switch 141 may also be part of one of a number of known telecommunications platforms that includes the functions of VRU 142.

Processing unit 135 and VRU 142 are connected through switch 141 and link 160 to voice communications network 150. Voice communications network 150 typically includes a long distance telecommunications network on the PSTN and is used to establish a voice connection between the user 100 and the subscriber's call center 170.

Those skilled in the art will recognize that the functions performed by servers 131, 133 and 134 of the present invention described above could also effectively be performed using a single processor unit or, equivalently,

in a number of combinations of processor unit(s) and/or server(s).

The subscriber's call center 170 typically contains an automatic call distribution (ACD) element 171 for connecting a call to agent 172 through a telephone 173. Agent 172 may also have access to a workstation 174 (such as a PC). ACD 171 and workstation 174 are typically connected through LAN 175 to a database 176 containing company information concerning the subscriber and its products or services.

Once it is determined by network service platform 130 that user 100 should be connected by voice to call center 170, platform 130 causes a voice call to be made from network 150 to user 100 (which may be routed through LEC 121) and from network 150 to call center 170; these calls are bridged together establishing a voice call between user 100 and call center 170. It will be clear to those skilled in the art that there are many configurations for routing a call from platform 130 to call center 170 over voice network 150, which configurations could include, for example, routing the call through a local exchange carrier, or through a packet network. Similarly, there are many configurations for routing a call from platform 130 to user 100 over voice network 150. Any of these routing configurations may be utilized in placing calls to the call center and to the user in accordance with the present invention.

Those skilled in the art will recognize that the present invention is equally applicable to the Internet and to other packet networks, such as corporate intranets, which are typically private IP-compatible networks having functionality similar to that of the Internet.

With reference to the architecture described above and depicted in FIG. 1A and with respect to the embodiment shown in FIG. 1B, further details of the present invention will now be set forth.

#### Typical Call Flow

A typical session and the message flows between various components, in the context of a network-based platform implementation of the present invention, are described below with reference to FIG 2. References to the architecture are included using the same numbered components as referred to in FIG. 1B. FIG 2 depicts the message flows between user 100, Web server 115 maintaining the subscriber's Web site, the network platform 130, voice network 150 (such as a telephone network interconnected by 4ESS® toll switches), call center 170 and call center agent 172. A default scenario is assumed in which the user is called prior to the launching of a call to the call center. The timing of the call placements is expected to be configurable by the subscriber and defined in policy entries in the subscriber database.

The fundamental operation of the present invention is initiated by a user who is engaged in a Web browsing session. A Web site associated with a subscriber con-

tains a "speak to agent" icon on a Web page at the site. At step 201, a Web session is underway with a user browsing Internet 110. The user locates the subscriber Web site and views a subscriber's page at its Web site. The subscriber's Web site is maintained on Web server 115 which can be operated by the subscriber or by a third party. On this Web page is a "Speak to Agent" icon with an associated overloaded URL. The overloaded URL specifies the network platform and "TAG1" information: a network platform "welcome" page, the subscriber's identifier (SID), and a subject code (SC) related to the Web page being viewed. In addition, the subscriber application may embed an optional "whisper code" character string in the URL which contains information specific to the user records at the subscriber's call center 170 or other information used by call center 170. If the subscriber application captures the user telephone number it may also be passed to the network platform in the overloaded URL. There may be several icons on a given Web page corresponding to different subject codes.

Step 202: The user clicks on a "speak to Agent" icon and the user's browser contacts the network platform 130 via the URL which points to platform 130. Through URL overloading, the network platform URL identifies the TAG1 SID and SC elements associated with the Web page that the user was browsing. Network platform 130 also captures an IP address of the user (or the user's proxy).

Step 203: Network platform 130 may check subscriber information contained in database 132 to see whether certain preconditions for establishing a connection to a call center 170 are present (e.g., is the call center accepting network calls from the region the user is calling from at that time or day). If the call is allowed, network platform 130 sends a "Welcome to Network Services" greeting page (or something similar) over Internet 110 via connection 145.

The user's telephone number for receiving the call may be ascertained in any number of known ways, e.g., prompting the user for the telephone number or for information (such as a network user ID, a password, or a customer code assigned to the user by the call center) from which platform 130 may determine the user's telephone number. Optionally, the greeting page may present information to the user and ask for confirmation.

Step 204: User 100 enters or confirms the requested information (which may include a telephone number) on the Web page and submits it over Internet 110 to network platform 130.

Step 205: The network platform 130 sends a "Connect Page" back to the user over Internet 110 indicating that the call center has been contacted and that user should expect a voice call in the future. The Connect Page may contain additional information or promotional content provided by the subscriber. Network platform 130 translates the TAG1 SID and subject code elements into a telephone number for a call center specified by

the subscriber and associated TAG2 data by, e.g., looking up data from database 132 (which may be indexed according to the subject-code and to the subscriber ID). In the case where the telephone number for the call center is a toll free telephone number, the TAG2 information may include a unique DNIS code (representative of the subject matter) corresponding to DNIS codes expected at the call center associated with the subscriber, and the call to be set up and originated to call center 170 will use the toll free number with the DNIS code set according to database 132.

Step 206: Network platform 130 initiates the calling process via platform switch 141 for placing calls on the PSTN 150 to the user 100 and to the call center 170. A default timing of the call placements could be to first call the user or, alternatively, the call center; the order and timing of the call placements may be specified in database 132. The calls may be placed simultaneously or after one or another of the legs of the call has gone off hook. If user 100 is called before call center 170, network platform 130 will play an announcement to the user indicating that the call center is being contacted. The remainder of this call flow description will assume that call center 170 is called only after a connection is first established with the telephone line of user 100.

Step 207: Switch 141 of network platform 130 initiates a call over voice telephone network 150 to user 100, which rings the user's telephone 102.

Step 208: The user answers, which generates an offhook signal on PSTN 150 ultimately received by network platform 130 via switch 141.

Step 209: Network platform 130 plays an announcement through switch 141 and PSTN 150 to user 100.

Step 210: Switch 141 of network platform 130 initiates a call to call center 170 over voice telephone network 150 with TAG2 Web interaction data accompanying the call. The TAG2 information accompanying the call may, in the case where the call center telephone number is toll-free, include DNIS codes.

Step 211: Voice telephone network 150 routes the call to ACD 171 at the call center 170 site, including accompanying TAG2 data.

Step 212: Call center ACD 171 connects the incoming call to call center agent 172.

Step 213: Agent 172 "signs on" to network platform 130 by, e.g., sending a unique DTMF tone sequence (such as # or \*) over PSTN 150 through ACD 171. If a DTMF tone sequence is used, the sequence would be intercepted at platform 130 by VRU 142.

Step 214: Network platform 130 "whispers" user information to agent 172 via text-to-speech transformation using VRU 142, which sends the whispered speech to agent 172 over voice network 150 through ACD 171. The whispered information may correspond to a customer code assigned by call center 170 to user 100.

Step 215: Network platform 130 bridges the two legs of the voice connection together, so that user 100



and the call center agent 172 may begin a voice conversation.

Step 216: Agent 172 may suggest that the user 100 receive additional information over Internet 110 via the user Web link 120. If the user agrees, agent 172 selects pages to "push" to the user; this is accomplished by, e.g., entering a sequence of one or more DTMF digits which is captured by VRU 142 in network platform 130 and translated by platform 130 into one or more HTML pages stored in Page Presentation Server 133 of platform 130.

Step 217: Page Presentation Server 133 causes the HTML page(s) selected by agent 172 to be sent to user 100 through connection 145, Internet 110 and Web link 120. The browser on the user's PC 101 causes the Web page to be displayed. (Steps 216 and 217 may be repeated during the course of the session.)

Step 218: The user and call center agent may complete any business to be transacted. By mutual consent, user 100 and agent 172 terminate the voice connection and disconnect signals are sent through PSTN 150 to network platform 130. The voice connection is then terminated.

Step 219: Network platform 130 sends a final "Web Disconnect" page to user 100 terminating the Web interaction between the subscriber and the user.

Those skilled in the art will recognize that the foregoing discussion represents only one possible embodiment of the present invention, and that other embodiments are possible. In particular, the use of DNIS codes and "whispering" of user information to the call center agent are but two alternatives for passing information about the user's Web session to the call center, and that other known methods exist in the telecommunications industry for transferring such information to the call center. Such methods may include, e.g., use of ANI (providing the user's telephone number), user-to-user information (UUI), network-to-user information (NUI), touch-tones (via DTMF reception), and IP messaging. Those skilled in the art will further recognize that some of the above-described messaging and signaling, such as a greeting page, a connect page, and announcements played to the user are optional and, where present, may be varied in their content and order of presentation without affecting the nature of the present invention.

The present invention may be implemented using hardware and software components known in the industry for implementing the required functionality as described above. Alternatively, the present invention could be implemented on a computer-based telephone network platform, such as the Lucent CONVERSANT® platform, which is well-known in the telecommunications industry.

In summary, a system and method for coordinating information at the network-based level between existing call centers and the Internet has been described which creates improved integration of and bonding between a

customer's interaction with a Web site and with a call center.

What has been described is merely illustrative of the application of the principles of the present invention. Other arrangements and methods can be implemented by those skilled in the art without departing from the spirit and scope of the present invention.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

## Claims

1. A method of causing a call to be placed to a call center associated with a subscriber in response to an act done by a user linked in an interactive communication session with a packet network, comprising the steps of:
  - a. receiving over the packet network information corresponding to at least one characteristic of the interactive communication session;
  - b. transforming the received information into a form suitable for placing a call over a telecommunications network to the call center, said call being routable by the call center in accordance with the information corresponding to at least one characteristic of the interactive communication session; and
  - c. initiating placement of a call to the call center in accordance with the transformed information.
2. The method according to claim 1, wherein the packet network comprises at least one of the Internet and an intranet, or
  - wherein the interactive communication session comprises Web browsing, or
  - wherein the at least one characteristic of the interactive communication session includes at least one of an identity of the subscriber and a subject matter associated with the interactive communication session, or
  - wherein the step of receiving information over the packet network includes receiving information transmitted over the packet network using a uniform resource locator (URL), or
  - wherein the step of transforming the information into a form suitable for placing a call over a telecommunications network to the call center includes the step of using a database containing at least one entry for information corresponding to at least one characteristic of the interactive communication session and at least one entry corresponding

to a communications number for the call center.

3. The method according to claim 2, wherein the at least one entry corresponding to a communications number for the call center comprises a dialed number identification service (DNIS) code. 5
4. The method according to claim 1, wherein the step of transforming the received information into a form suitable for placing a call over a telecommunications network to the call center comprises transforming the received information into a dialed number identification service (DNIS) code. 10
5. The method according to claim 4, wherein the step of initiating placement of a call to the call center in accordance with the transformed information comprises instructing a telecommunications switch coupled to the telecommunications network to place a call to a communications number corresponding to the DNIS code. 15 20
6. The method according to claim 1, wherein:
  - a. the packet network comprises at least one of the Internet and an intranet; 25
  - b. the interactive communication session comprises Web browsing;
  - c. the at least one characteristic of the interactive communication session includes at least one of an identity of the subscriber and a subject matter associated with the interactive communication session; 30
  - d. the step of receiving information over the packet network includes receiving information transmitted over the packet network using a uniform resource locator (URL); 35
  - e. the step of transforming the received information into a form suitable for placing a call over a telecommunications network to the call center comprises transforming the received information into a dialed number identification service (DNIS) code using a database containing at least one entry for information corresponding to at least one characteristic of the interactive communication session and at least one entry corresponding to a communications number for the call center; and 45
  - f. the step of initiating placement of a call to the call center in accordance with the transformed information comprises instructing a telecommunications switch coupled to the telecommunications network to place a call to a communications number corresponding to the DNIS code. 50 55
7. A method of sending, in response to a signal from a call center, a communication over a packet network

to a user linked in an interactive communication session with the packet network, comprising the steps of:

- a. receiving the signal from the call center over a telecommunications network;
  - b. determining from the received signal at least one page, displayable to the user on a display device, to send to the user;
  - c. sending the displayable page to the user over the packet network.
8. The method according to claims 7, 15 or 16, wherein the signal received from the call center comprises at least one dual tone multiple frequency (DTMF) code, or
  - wherein the displayable page corresponds to a page displayable using a Web browser.
9. A method of correlating information between a call center associated with a subscriber and a packet network linked in an interactive communication session with a user, comprising the steps of:
  - a. receiving over the packet network information corresponding to at least one characteristic of the interactive communication session;
  - b. communicating the information corresponding to at least one characteristic of the interactive communication session to the call center over a telecommunications network; and
  - c. bonding a telecommunications session between the user and the call center together with the interactive communication session.
10. The method according to claim 9, wherein the packet network comprises at least one of the Internet and an intranet, or
  - wherein the interactive communication session comprises Web browsing, or
  - wherein the at least one characteristic of the interactive communication session includes at least one of an identity of the subscriber and a subject matter associated with the interactive communication session, or
  - wherein the step of receiving information over the packet network includes receiving information transmitted over the packet network using a uniform resource locator (URL), or
  - wherein the step of communicating the information corresponding to at least one characteristic of the interactive communication session to the call center over a telecommunications network includes the step of transforming the information into a form suitable for placing a call over a telecommunications network to the call center, said call being routable by the call center in accordance with the information corresponding to at least one charac-

teristic of the interactive communication session.

11. The method according to claim 10, wherein the step of the step of transforming the information into a form suitable for placing a call over a telecommunications network to the call center includes the step of using a database containing at least one entry for information corresponding to at least one characteristic of the interactive communication session and at least one entry corresponding to a communications number for the call center.
12. The method according to claim 11, wherein the at least one entry corresponding to a communications number for the call center comprises a dialed number identification service (DNIS) code, or wherein the at least one characteristic of the interactive communication session includes at least one of an identity of the subscriber and a subject matter associated with the interactive communication session.
13. The method according to claim 10, wherein the step of transforming the received information into a form suitable for placing a call over a telecommunications network to the call center comprises transforming the received information into a dialed number identification service (DNIS) code.
14. The method according one or more of claims 9-13, wherein the step of bonding a telecommunications session between the user and the call center together with the interactive communication session includes bridging a telecommunications connection to the user together with a telecommunications connection to the call center associated with the subscriber to establish a telecommunications connection between the user and the call center while the packet network remains linked in the interactive communications session with the user, or wherein the method further comprises the step of sending a communication to the user over the packet network.
15. The method according to claim 14, wherein the step of sending a communication to the user over the packet network includes sending a page displayable to the user on a display device.
16. The method according to claim 14, wherein the step of sending a communication to the user over the packet network is performed in response to a signal from the call center.
17. The method according to one or more of claims 9-16, wherein the step of communicating the information corresponding to at least one characteristic of the interactive communication session to the call center over a telecommunications network includes the step of sending audio signals representing the information to the call center.
18. The method according to claim 17, wherein the step of sending audio signals representing the information to the call center comprises:
  - a. transforming the information into audible sounds; and
  - b. playing the audible sounds over a telecommunication connection established with the call center.
19. The method according to one or more of claims 9-18, wherein the step of communicating the information corresponding to at least one characteristic of the interactive communication session includes verifying the authority of the call center to receive the information.
20. A system for correlating information between a call center associated with a subscriber and a packet network linked in an interactive communication session with a user, comprising:
  - a. a telecommunications unit coupled to a telecommunications network; and
  - b. a processing unit coupled to the packet network and to the telecommunications unit, wherein the processing unit is programmed to carry out the steps of controlling the correlation of information between the call center and the packet network, which steps include:
    - (1) receiving over the packet network information corresponding to at least one characteristic of the interactive communication session;
    - (2) instructing the telecommunications unit to communicate the information corresponding to at least one characteristic of the interactive communication session to the call center over a telecommunications network; and
    - (3) initiating the bonding of a telecommunications session between the user and the call center together with the interactive communication session.
21. The system according to claim 20, wherein the processing unit comprises:
  - a. a computer;
  - b. a database; and
  - c. at least one of:

- (1) a database server;
- (2) a call manager server; and
- (3) a page presentation server.

22. The system according to claim 21, wherein the telecommunications unit comprises a telecommunications switch and a voice response unit, or  
wherein the packet network comprises at least one of the Internet and an intranet, or  
wherein the interactive communication session comprises Web browsing.

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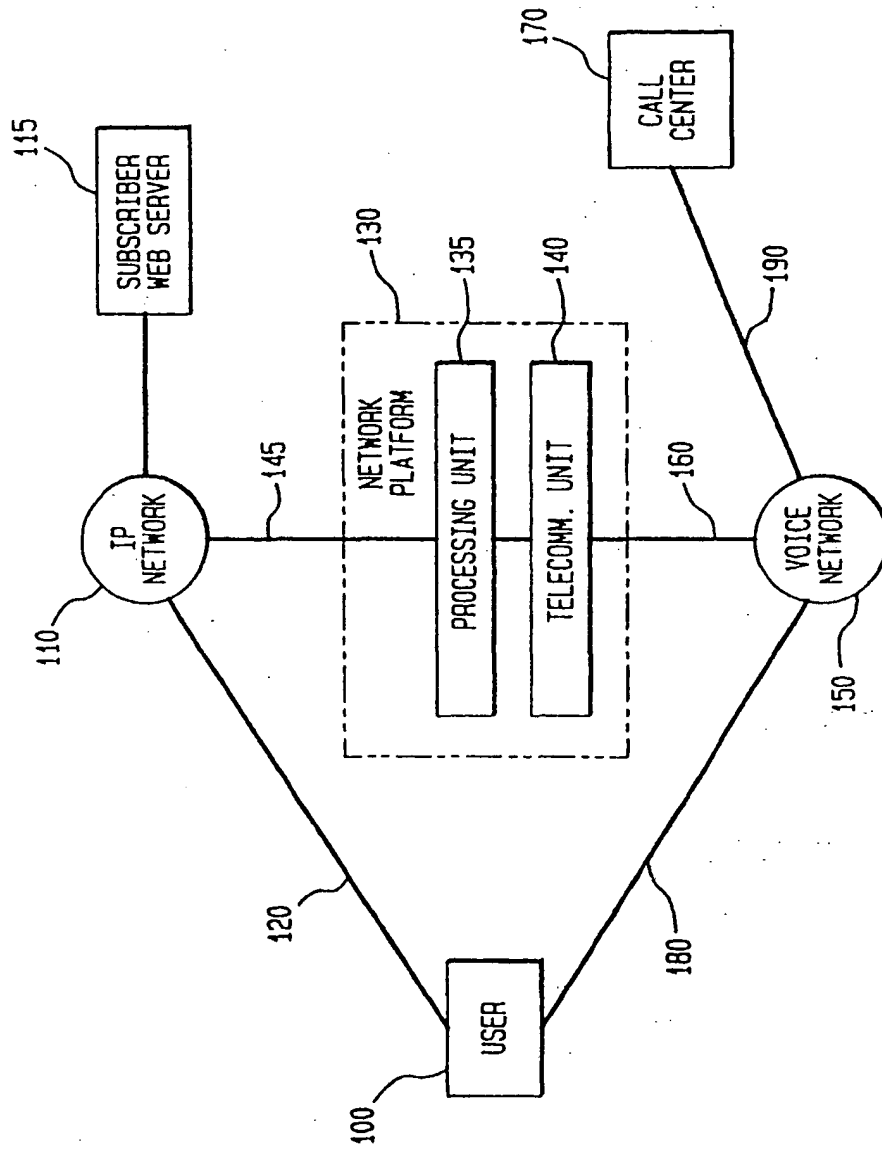
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FIG. 1A



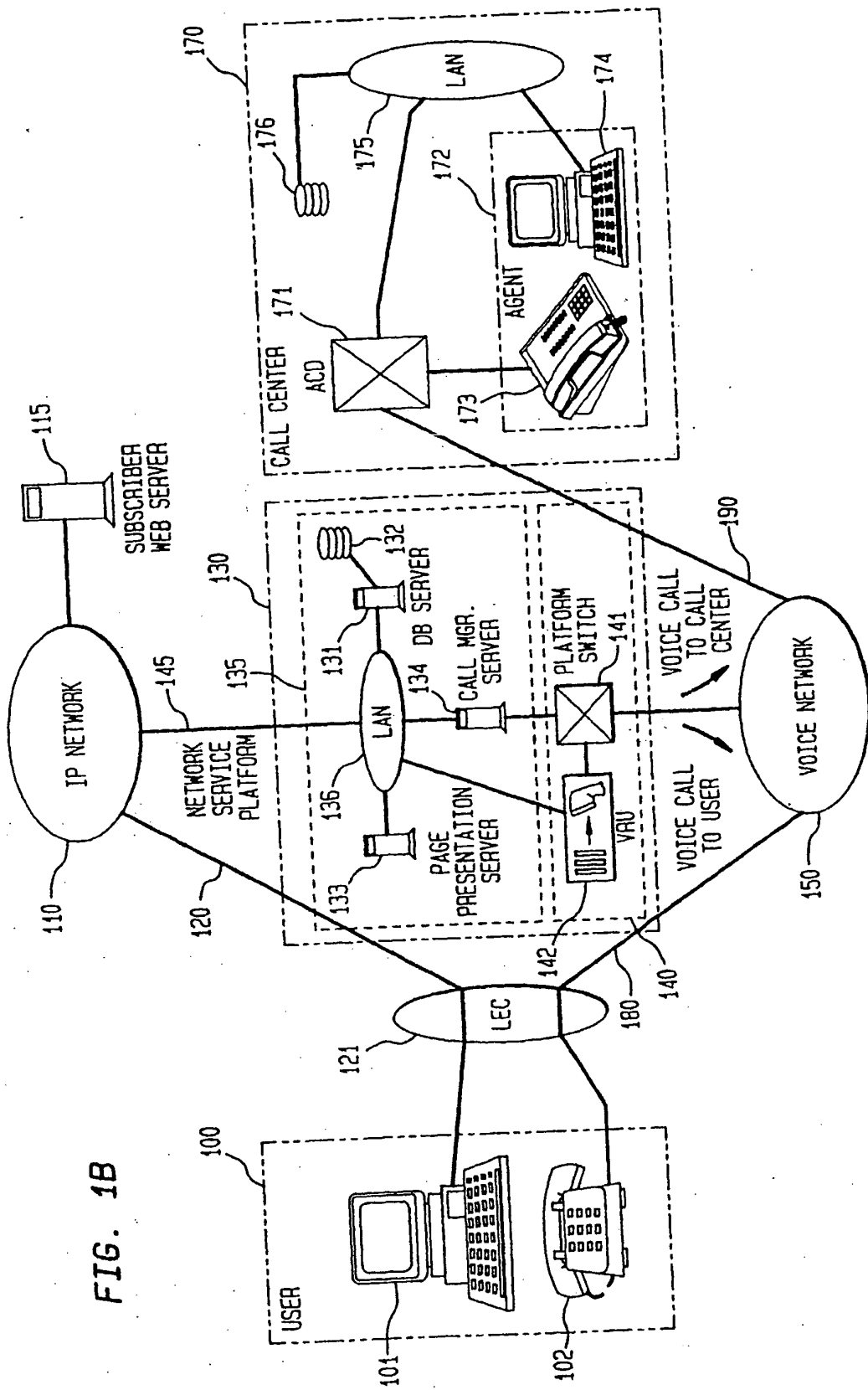
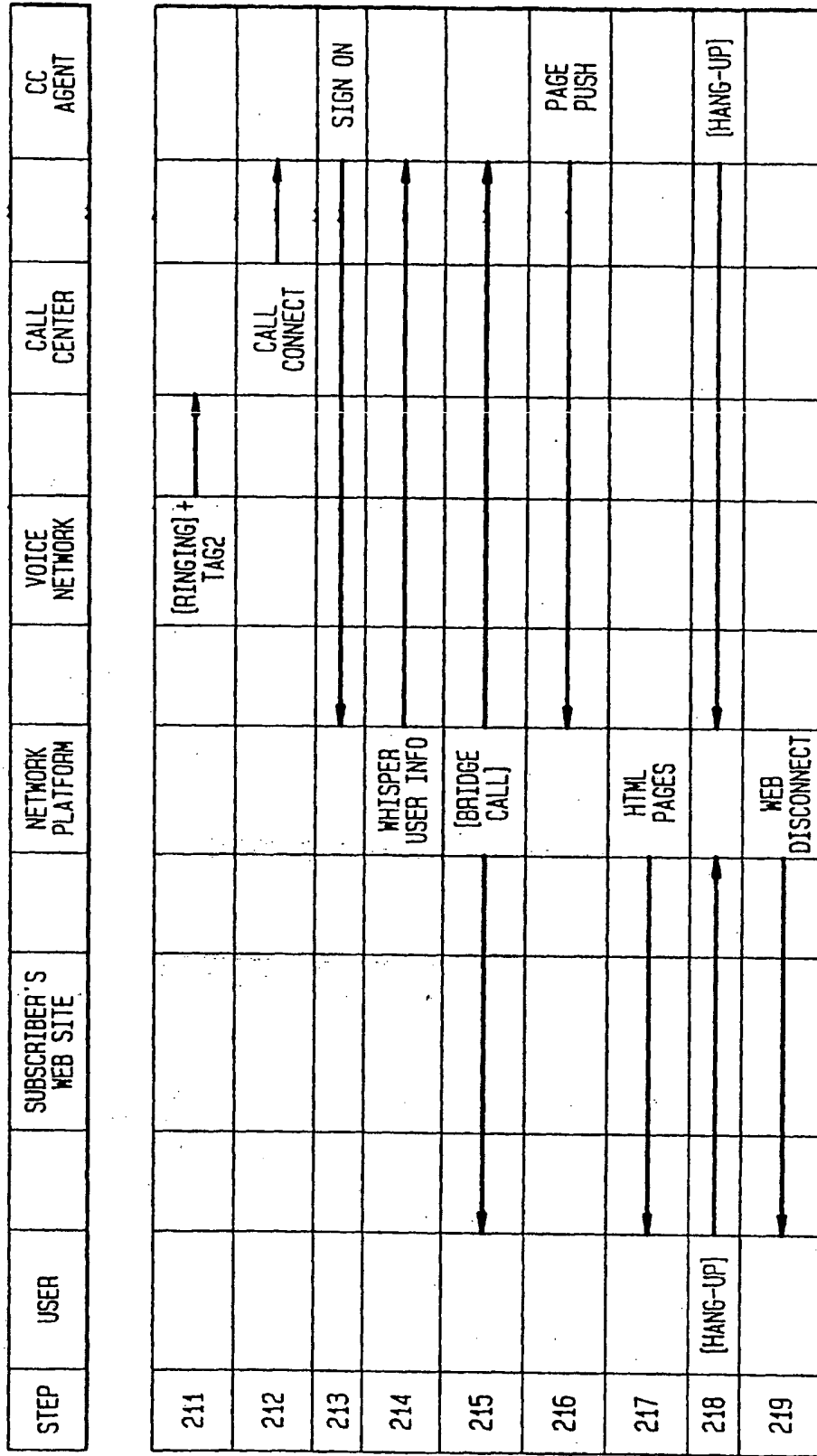


FIG. 1B

FIG. 2A

STEP	USER	SUBSCRIBER'S WEB SITE	NETWORK PLATFORM	VOICE NETWORK	CALL CENTER	CC AGENT
201		→ *SPEAK TO AGENT, ICON (URL)				
202	*SPEAK TO AGENT, URL, USER ADDR	→ URL+TAG1 (STD, SC, USER, ADDR)				
203		→	WELCOME PAGE			
204	USER INFO	→				
205		→	CONNECT PAGE			
206		→	USER TEL#			
207		→		[RINGING]		
208	[OFF-HOOK]	→				
209		→	ANNOUNCE- MENT			
210		→	CC TEL# TAG2			

FIG. 2B





(19)



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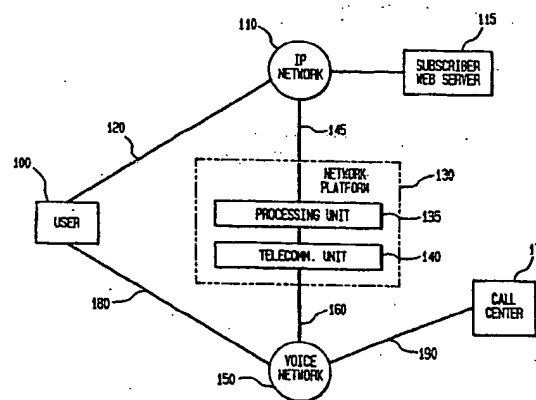
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## (54) Correlating information between internet and call center environments

(57) Coordination of information at the network-based level between call centers connectable over a telecommunications network, such as the telephone network, and a packet network, such as the Internet, creates improved integration of and bonding between a customer's interaction with a Web site and with a call center. Information about the customer and the customer's Web interaction are delivered to the call center agent along with the call, leading to increased productivity and efficiency in call handling as well as improved call routing.

Calls may be routed to existing call centers based upon information from the Web experience, and information from the user's Web interaction is shared with the call center. Web interaction information is passed to existing call centers using known call center external control methods, such as DNIS signaling. Information about the Web experience may also be "whispered" to the call center agent, and an agent may "push" Web pages for review by the customer. As a result, customer acquisition and sales tools more powerful than a mere click-to-callback tool can be made available with a combined marketing approach using the Web and call centers.

FIG. 1A



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# EUROPEAN SEARCH REPORT

Application Number  
EP 97 11 4192

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
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-/--			
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>21 July 2000</b>	Examiner <b>Megalou, M</b>
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			



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# EUROPEAN SEARCH REPORT

Application Number  
EP 97 11 4192

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	JACOBS S ET AL: "Filling HTML forms simultaneously: CoWeb - architecture and functionality" COMPUTER NETWORKS AND ISDN SYSTEMS,NL,NORTH HOLLAND PUBLISHING. AMSTERDAM, vol. 28, no. 11, 1 May 1996 (1996-05-01), pages 1385-1395, XP004018236 ISSN: 0169-7552 * page 1386, right-hand column, last paragraph - page 1387, right-hand column, last line * * page 1389, left-hand column, paragraph 3.2 - page 1391, left-hand column, line 3 *	7,8	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
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The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>21 July 2000</b>	Examiner <b>Megalou, M</b>
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### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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**LACK OF UNITY OF INVENTION  
SHEET B**

Application Number  
**EP 97 11 4192**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

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21-07-2000

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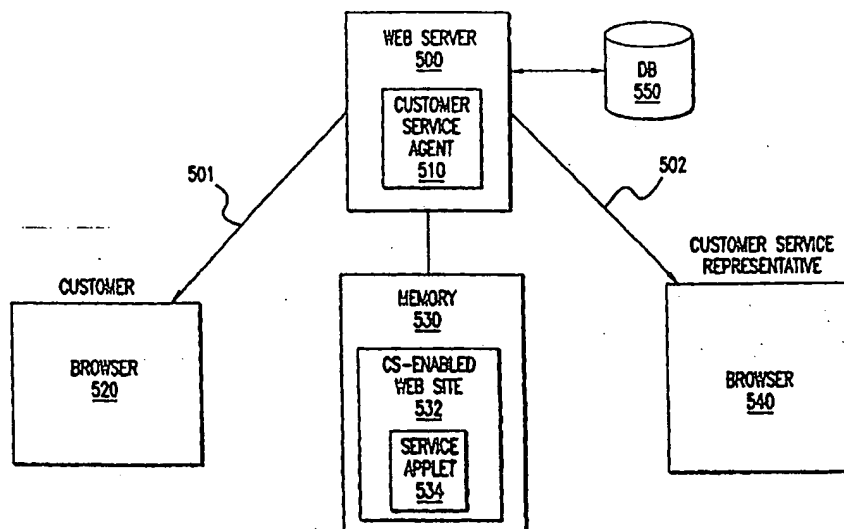
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>G06F 17/00</b>		A2	(11) International Publication Number: <b>WO 99/01826</b>
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(71) Applicant: BUSINESS EVOLUTION, INC. [US/US]; 4365 Route One, Princeton, NJ 08540 (US).		Published Without international search report and to be republished upon receipt of that report.	
(72) Inventor: KANNAN, Pallipuram, V.; 1231 Town Court North, Lawrenceville, NJ 08648 (US).			
(74) Agents: LEE, Michael, Q. et al.; Sterne, Kessler, Goldstein & Fox P.L.L.C., Suite 600, 1100 New York Avenue, N.W., Washington, DC 20005-3934 (US).			

(54) Title: METHOD, SYSTEM AND COMPUTER PROGRAM PRODUCT FOR PROVIDING CUSTOMER SERVICE OVER THE WORLD-WIDE WEB

(57) Abstract

A method, system, and computer program product provides live customer service between a customer and a CSR in real-time over the World Wide Web. Customer service for the Web is provided which is secure, private and responsive to particular customer needs. Queries sent by potential customers browsing a Web site are intelligently routed to appropriate customer service representatives. Potential customers browsing a Web site are also intelligently routed to appropriate customer service representatives. A memory coupled to a server stores a CS enabled Web site having a service applet. When a customer browses the CS-enabled Web site, the service applet is downloaded and executes in a customer computer to support the live customer service. The server executes a customer service agent. The customer service agent enables a customer service window to be displayed by the customer browser. A CSR window is displayed on a browser of the CSR. The customer service agent and service applet determine whether a customer qualifies for live customer service. The level of customer service to be provided can be based at least upon one of the following: browsing data gathered while the customer browses the CS enabled Web site; a customer profile; and a policy of the CS enabled Web site. The customer service window can include a service dialog window and/or a service form. Polling allows a customer to be notified while the customer is browsing the Web that a CSR has chosen to respond to the query input by the customer. Messages are encapsulated/de-encapsulated in HyperText Transport Protocol (HTTP) to pass through Internet firewalls. Secure communication for Web-based customer service is provided. Communication between the customer and the CSR can be supervised and customer service performance can be tracked.



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CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon		Republic of Korea	PT	Portugal		
CN	China	KR	Kazakhstan	RO	Romania		
CU	Cuba	KZ	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LC	Liechtenstein	SD	Sudan		
DE	Germany	LI	Sri Lanka	SE	Sweden		
DK	Denmark	LK	Liberia	SG	Singapore		
EE	Estonia	LR					



# Method, System, and Computer Program Product for Providing Customer Service Over the World-Wide Web

## *Background of the Invention*

### 5        1.     *Field of the Invention*

The present invention relates generally to computer networking and communication. More particularly, the present invention pertains to customer service in Web-based communications and commerce.

### 2.     *Related Art*

10            The World Wide Web is increasingly becoming the Internet technology relied upon for conducting electronic commerce. The World Wide Web, also called the Web or WWW, has three basic parts: client software, servers and content. Client software runs on a user's computer and, among other things, provides the graphical user-interface through which a user can "browse" or "surf" the Web. Servers (also called Web servers) are computers that provide the  
15            content to users through a communication link. Content can be any kind of multi-media, e.g., images, text, animation, motion video, sound, and Java applets. Communication between a browser and a server is carried out through a Hyper Text Transfer Protocol (HTTP). Web content is primarily transferred in Web documents or files, called Web pages, which are addressed by a Uniform  
20            Resource Locator (URL). Web pages are often multi-media hypertext documents written in a HyperText Markup Language (HTML) which supports hyper-linking. See, e.g., Hoffman, *Netscape and the World Wide Web for Dummies, 2nd Ed.*, (IDG Books World Wide, Inc.: U.S.A. 1996), pp. 11-61 (incorporated herein in  
25            entirety by reference).

These parts are well-suited for electronic commerce or Web commerce. Many merchants or sellers advertise their products on Web pages. Potential customers shop by visiting the Web pages of interest to check out products and

services being offered. Different types of on-line malls and markets and other business services and associations have evolved on the Web. See, Hoffman at pp. 173-188. A few companies have attempted to create a community of users using "chat" and other real-time communication tools. These require a web visitor to  
5 move to a special unsecure area and chat with other visitors or with a company representative. Such chat is not effective for electronic commerce over the Web because the chat may not be private or secure. Many customers may not feel secure when others are present in the chat areas to obtain customer service using a text based chat user interface.

10 Data entry is possible through a Common Gateway Interface (CGI) approach. The Java programming language provides both secure communication and supports data entry. Such data entry or user input is especially important in Web commerce and Java commerce. Data entry allows users to fill-out and send order forms or customer profiles to sellers. In Java commerce, users can also fill  
15 up shopping carts and can carry out commercial transactions, such as credit-card transactions and other purchases. See, Jardin, *Java Electronic Commerce Sourcebook: All the Software and Expert Advice You Need to Open Your Virtual Store*, (Wiley Computer Publishing: U.S.A. 1997), the entire book (incorporated in its entirety herein by reference); and U.S. Patent Nos. 5,715,314; 5,724,424; and 5,708,780 assigned on their face to Open Market, Inc.  
20

However, customer service needs to be provided on-line, live, and in real-time over the Web. Such on-line, live customer service in real-time is essential to further promote electronic commerce over the World Wide Web. Effective customer service must instill confidence between a potential on-line customer and  
25 a seller. To instill confidence requires effective communication which emulates human-to-human interaction in real-time.

Communication between a customer and a seller must be clear and responsive. A customer needs sufficient information about product or service to have confidence that the product or service will meet the customer's needs. A  
30 seller can advertise a product or service on a Web page or site, but a customer

needs to be able to ask questions. The flexibility and response of human-to-human interaction is needed.

Communication between a customer and a seller must also be secure and private (one-to-one). In this way, parties can ask questions and exchange personal data, credit card information, etc. to complete the commercial transaction.

Further, it is desirable that communication for customer service be able to pass through firewalls. In this way, a large customer base can be reached, including potential customers which access the Internet via a proxy server and firewall.

Different networking tools or services allow remote users to communicate with each other over a communication link. However, such tools cannot provide effective on-line, live customer service in real-time over the World Wide Web. These tools are either unavailable for World Wide Web applications or do not allow clear, responsive, secure, and private communication and real-time, human-to-human interaction which is vital to instilling confidence in a commercial transaction.

For example, electronic mail (e-mail) services allow users to send text messages and files to each other. To send e-mail, a sender must know beforehand a receiver's network address. In WWW applications, a potential customer browsing a Web site must know or be able to select a customer representative's e-mail address. This can limit the routing of a potential customer query to an appropriate CSR or the routing of a potential customer to an appropriate CSR. E-mail services are also fairly insecure. See, Krol, *The Whole Internet: User's Guide and Catalog, Second Ed.* (O'Reilly & Associates, U.S.A.: April 1994) Chapter Seven, pp. 101-150 (incorporated by reference herein in its entirety).

E-mail services also operate as store-and-forward services separate from World Wide Web applications. See, e.g., "Wired Customer Service" ([http://www.wired.com/wired/customer\\_service](http://www.wired.com/wired/customer_service), downloaded May 15, 1998). Because the transfer of e-mail messages involves many store and forward operations, a direct question and answer exchange (where the Q and A are kept

together) between a potential customer and CSR cannot be assured while the customer is browsing. Finally, because e-mail messaging is separate from WWW applications, contextual information regarding the Web page is absent from the e-mail message. A customer cannot just type a query to a CSR as the CSR will not be able to immediately associate contextual information from the Web page that the customer is visiting. Thus, conventional e-mail services do not provide effective live customer service in real-time over the World Wide Web.

Similarly, telephone numbers of CSRs have been provided at Web sites for customer service. See, e.g., "Wired Customer Service" ([http://www.wired.com/wired/customer\\_service](http://www.wired.com/wired/customer_service), downloaded May 15, 1998). However, this requires a potential customer to place a separate phone call. Such a call may not even be able to be made while the customer is browsing if an additional phone line is not available. Because the phone call is separate from Web browsing, the contextual information regarding the Web page is also not communicated to a CSR without further input or description by the user.

Internet chat programs have been used as well to provide limited customer service over the WWW. For example, a Web site is provided with a "Help" or "Customer Service" button. When a customer browsing the Web site presses the Help button for service, the customer is sent to a chat room to converse with a CSR. Such chat rooms, however, are not private or secure. Chat rooms are essentially a form of "many-to-many" communication. In a chat room, each customer query and a response by a CSR can be seen by all chat room participants.

Similarly, other Internet services, such as, Internet Relay Chat (IRC) or newsgroups, are not suitable for providing customer service in commerce over the Web. IRC broadcasts messages to anyone logged on to IRC. See, Krol at pp. 342-346. In newsgroups, messages are posted and available to all newsgroups users. See, Krol, at pp. 151-185. Enhanced IRC, I-chat, and Palace services provide talk services but do not have adequate security or privacy and do not allow point-to-point communication behind firewalls.

What is needed is an invention which provides on-line, live customer service between a potential customer and a customer service representative over the World Wide Web in real-time. Customer service is needed which is secure and responsive to particular customer needs. Customer service channeled through secure, private, human-to-human communication between a browsing customer and a CSR in real-time over the Web is needed.

### *Summary of the Invention*

The present invention provides on-line, live customer service between a potential customer and a customer service representative over the World Wide Web in real-time. Customer service for the Web is provided which is secure and responsive to particular customer needs. Customer service is channeled through secure, private, human-to-human communication between a browsing customer and a CSR in real-time over the Web.

Queries sent by potential customers browsing a Web site are intelligently routed to appropriate customer service representatives. Potential customers browsing a Web site are also intelligently routed to appropriate customer service representatives.

The present invention includes a method, system, and computer program product for providing live customer service between a customer and a CSR in real-time over the World Wide Web. In one embodiment, a server is linked to first and second computers over the WWW. The first computer supports a customer browser. The second computer supports a CSR browser. A memory coupled to the server stores a CS enabled web site having active content, such as, a service applet.

When a customer browses the CS-enabled web site, the active content is downloaded and executes in the first computer to support the live customer service. The server executes a customer service agent. In one example, the customer service agent is a computer program. The customer service agent enables a customer service window to be displayed by the customer browser. The

customer service agent receives a query input in the customer service window by the customer and routes the received query to a CSR. The customer service agent enables a CSR window including the received query to be displayed on a browser of the CSR and sends a response input in the CSR window by the CSR to the browser of the customer.

In one example implementation according to the present invention, the customer service agent further comprises a service manager, a matcher, and a dialog manager. The service manager enables the customer service window to be displayed by the customer browser and stores the query input in the customer service window by the customer in a first queue. The matcher matches the stored query in the first queue to a CSR and stores transfers the query into a second queue. The service manager further enables a CSR window including the query stored in the second queue to be displayed on the browser of the CSR and transfers control to the dialog manager after the matcher has stored the query in the second queue. The dialog manager sends the response input in the CSR window by the CSR to the browser of the customer while the customer browses the World Wide Web.

Similarly, in one embodiment a method is provided according to the present invention that includes the step of enabling a web site for live customer service (CS). For example, to enable a web site for live service, a customer service agent is provided at a Web server hosting the web site. Active content is provided in a web page at the web site. The customer service agent executes in response to a customer browsing the CS enabled web site. The active content can be a service applet that executes to read customer profile data, to encapsulate and de-encapsulate messages in HTTP, and to poll the web site.

The method enables a customer service window to be displayed on a browser of the customer visiting the CS enabled web site. The customer service agent and service applet can determine whether a customer qualifies for live customer service. The customer service window can be opened by the customer. Alternatively, the customer can be prompted for customer service. While a customer browses the CS enabled web site, browsing data is gathered. The

customer can be prompted for live customer service based on the gathered browsing data. For example, a prompt may be made when the customer is switching back and forth between Web pages, or is delaying at a given Web page.

5 The method further generates a customer profile. The level of customer service to be provided can be based at least upon one of the following: browsing data gathered while the customer browses the CS enabled web site; a customer profile; and a policy of the CS enabled web site. The contents of the customer service window can be set based on the level of customer service to be provided.

10 For example, the customer service window can include a service dialog window and/or a service form to be displayed on a browser of the customer visiting the CS enabled web site. In one example, the customer service window includes a service dialog window when an express interactive customer service is provided. A service dialog window and a service form are used when a full interactive customer service is provided. In another example, the method initially  
15 enables a service dialog window to be displayed on a browser of the customer visiting the CS enabled web site to exchange messages with a CSR; and subsequently enables a service dialog window and a service form to be displayed on the browser of the customer visiting the CS enabled web site when a transaction is to be completed which is more complex than exchanging messages.

20 According to the method of the present invention, a query input in the customer service window by the customer is received at a server and routed to a CSR. A CSR window that includes the received query is enabled to be displayed on a browser of the CSR. The routing step comprises intelligently routing the query to a CSR based on at least one of the following criteria: content, context,  
25 question, and qualifications. In one example implementation, the intelligently routing step includes the steps of storing the query and a corresponding customer URL in a queue of pending customer queries; matching the stored query to a CSR based on at least one of the following criteria: content, context, question, and qualifications; and storing the query in a service queue capable of being displayed  
30 in the CSR service window by the matched CSR.

According to one example, a CSR window is enabled to be displayed that allows a CSR to access at least one of the following: data in the customer profile, a list of scripts, and a list of recommended answers. For example, the CSR window to be displayed can include a service dialog window, a comments window, a response entry window, and a menu bar having at least the following group of buttons: Queue button, Customer Details button, Recommend Answers button, Update Customer Profile button, and a Scripts button. The query can be analyzed dynamically against a knowledge base to generate a list of recommended answers for display in the CSR window. These tools assist the CSR in formulating an effective and accurate response and help ensure a consistent response is formulated. A response input in the CSR window by the CSR is received by a server and is sent to the browser of the customer.

Once a customer has sent a query a customer can maintain his or her browser pointed at the same web site (URL address) to ensure that an HTTP connection is maintained. Alternatively, according to a further feature of the present invention, the customer can send a query and while waiting for a response continue to browse the World Wide Web or do something else. The customer service agent will then notify the customer that a CSR has picked up the query or has sent a response. For example, the customer can browse other Web sites and then be notified that the CSR has picked up the customer. The customer can also performed other unrelated computer tasks. For example, the customer can minimize the browser and switch to a different application and still be notified that CSR has picked up the customer.

The ability to notify the customer is achieved using a polling feature of the present invention which establishes a quasi-persistent link. The quasi-persistent link can be established even in a HTTP environment where a connection is closed after a message is sent or received. According to this feature, the method polls the web site after the query is input in the customer service window. The polling allows a customer to be notified while the customer is browsing the Web or performing another task that a CSR has chosen to respond to the query input by the customer. In this way, a quasi-persistent communication link can be



established between a browsing customer and a server (and a CSR) even in a Web environment using HTTP where communication between a browser and a server occurs as a series of discrete temporary connections.

5 The method further includes the step of managing a dialog between the customer and the CSR once a CSR has picked up a customer. According to a further feature, steps are included for encapsulating and de-encapsulating messages in HyperText Transport Protocol (HTTP) messages sent to and from the customer browser and/or the CSR browser. For example, such steps can include encapsulating the query input in the service window into a HTTP message prior to sending the query input from a computer at the customer browser; encapsulating the response from the CSR into a HTTP message prior to sending the response to the computer at the customer browser; and de-encapsulating the HTTP message received at the computer at the customer browser to extract the response. In this way, communication can occur through a firewall that allows HTTP traffic to pass. Secure communication is attained because the present invention can incorporate a Secure Socket Layer or other Web security technique.

The method can also include the steps of supervising communication between the customer and the CSR and tracking customer service performance.

20 Further features and advantages of the present invention, as well as the structure and operation of various embodiments of the present invention, are described in detail below with reference to the accompanying drawings.

### *Brief Description of the Drawings*

25 The accompanying drawings, which are incorporated herein and form part of the specification, illustrate the present invention and, together with the description, further serve to explain the principles of the invention and to enable a person skilled in the pertinent art make and use the invention.

FIGS. 1-4 illustrate an example Internet architecture and example Internet services including the World Wide Web.

FIG. 1 is a diagram showing different types of users and communications which can be connected over an Internet architecture.

FIG. 2 shows a communication model supporting Web commerce.

FIG. 3 shows an example of an Internet network supporting Web commerce.

FIG. 4 shows an example of Java enabled browsers coupled to a Web server for reading Web pages and Java files, including interpreting and loading applets embedded in HTML documents.

FIG. 5A is a block diagram showing components for providing live customer service over the Web according to one embodiment of the present invention.

FIG. 5B shows an example architecture for providing live customer service in a full customer service center according to one example implementation of FIG. 5A.

FIG. 6 is a diagram of a customer service agent and customer and CSR browsers according to one example implementation of the present invention.

FIGs. 7A and 7B show a routine for providing live customer service according to one embodiment of the present invention.

FIGs. 8A and 8B are flowcharts showing steps in FIG. 7B in further detail according to one example of the present invention.

FIG. 9 shows a customer service window that includes a service dialog window according to an example of the present invention.

FIG. 10 shows an example customer service window including a service dialog window and a service form.

FIG. 11 shows examples of authorization and registration forms.

FIG. 12 shows an example customer service representative window used in a full customer service center embodiment of the present invention.

FIG. 13 shows an example customer service representative window used in an express customer service embodiment of the present invention.

FIGs. 14A, 14B, 14C, 14D, 14E, 14F, 14G, 14H, 14I, 14J, 14K, 14L, 14M, 14N, and 14O are screen displays illustrating an example of live customer service supporting online travel reservations according to the present invention.

5 FIGs. 15A, 15B, 15C, 15D, 15E, 15F, and 15G are screen displays illustrating an example of a supervisor interface monitoring the live customer service in FIGs. 14A-14O according to the present invention.

FIG. 16 shows an example routine for providing customer service over the Web according to another embodiment of the present invention.

10 FIG. 17 illustrates an example of HTTP tunneling whereby messages encapsulated in HTTP can pass through firewalls.

FIG. 18 is a block diagram of a computer system according to an example implementation of the present invention.

15 The present invention will now be described with reference to the accompanying drawings. In the drawings, like reference numbers indicate identical or functionally similar elements. Additionally, the left-most digit(s) of a reference number typically identifies the drawing in which the reference number first appears.

## *Detailed Description of the Figures*

### *Overview and Terminology*

20 The present invention provides a method, system, and computer program product for on-line, live customer service over the World Wide Web (WWW) in real-time. The term "on-line" refers to communication over a computer network. The term "live" refers to communication between a customer and a customer service representative including humans and/or automated agents such as a robotic interface. The term "real-time" means information, such as a customer query and a CSR response, can be exchanged in a round-trip cycle between a customer and a customer service representative with little or no delay such as within seconds or minutes (any delay being substantially a function of the communication medium and devices connected between customer and CSR).

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The present invention is described with respect to customer service over the WWW. In general, the present invention is not so limited and can be applied to provide and support any communication over the WWW including person-to-person communication unrelated to customer service. Further, the present invention is not limited to the Web and, in general, can be applied to provide and support any communication over any interactive, computer networking service, including but not limited to the Web.

### *Example Environment*

The present invention can be implemented in any communication network, such as, the Internet, which supports interactive services and applications. In particular, the present invention can be implemented in any Web service, preferably a Web service supporting secure transactions, such as, the Secure Socket Layer (SSL) protocol and/or using a Secure HyperText Transport Protocol (S-HTTP). In one example, the present invention is implemented in a multi-platform (platform independent) programming language such as Java 1.1. Java-enabled browsers are used, such as, Netscape, HotJava, and Microsoft Explorer browsers. Active content Web pages are used. Such active content Web pages can include Java applets or ActiveX controls, or any other active content technology developed now or in the future. The present invention, however, is not intended to be limited to Java or Java-enabled browsers, and can be implemented in any programming language and browser, developed now or in the future, as would be apparent to a person skilled in the art given this description.

For example, FIG. 1 shows a communication network, Internet 100, which can support the invention. Internet 100 consists of interconnected computers which supports communication between many different types of users including businesses, universities, individuals, government, and financial institutions. Internet 100 supports many different types of communication links implemented in a variety of architectures. For example, voice and data links can be used including phone, paging, cellular, and cable TV (CATV) links. Terminal

equipment can include local area networks, personal computers with modems, content servers of multi-media, audio, video, and other information, pocket organizers, Personal Data Assistants (PDAs), and set-top boxes. See, for example, Martin, J., *TCP/IP Networking Architecture, Administration, and Programming*, PTR Prentice-Hall, Inc., New Jersey (1994) (incorporated in its entirety herein by reference); and Lee *et al.*, *Intellectual Property for the Internet* (John Wiley & Sons: U.S.A. 1997), p. 4.

Communication over a communication network such as Internet 100 is carried out through different layers of communication. FIG. 2 shows a simplified four-layered communication model supporting Web commerce including an application layer 200, transport layer 210, Internet layer 220, physical layer 230. As would be apparent to a person skilled in the art, in practice, a number of different layers can be used depending upon a particular network design and communication application. See, E. Harold, *Java Network Programming* (O'Reilly & Associates, Inc.: U.S.A. 1997), pp. 1-55 (incorporated in entirety herein by reference). Application layer 200 represents the different tools and information services which are used to access the information over the Internet. Such tools include, but are not limited to, telenet log-in service 201, IRC chat 202, Web service 203, and SMTP (Simple Mail Transfer Protocol) electronic mail service 206. Web service 203 allows access to HTTP documents 204, and File Transfer Protocol (FTP), and Gopher files 208. See, Liu *et al.*, *Managing Internet Information Services* (O'Reilly & Associates, U.S.A.: April 1994) p. 287 (incorporated by reference herein in its entirety). A Secure Socket Layer (SSL) is a protocol used to encrypt communications between a Web browser and Web server. See, L. Stein, *Web Security: A Step-By-Step Reference Guide* (Addison-Wesley: Reading, MA 1998), pp. 36-47 (incorporated by reference herein in its entirety).

FIG. 3 shows an example of an Internet network 320 supporting Web service 203. A Web browser 310 is connected to a Web server 330 through Internet network 320. An Internet Service Provider (ISP) 322 links the computer of Web browser 310 to Internet network 320. ISP 328 links Web server 330 to

Internet network 320. Regional service providers 324, 326 and other intermediaries (not shown) route traffic between ISPs 322 and 328. See, L. Stein, at p. 5.

FIG. 4 shows how Java-enabled browsers (HotJava 410, Netscape 420) interact with a Web server 430 to make requests to the server and to download interactive Web pages including Java files and other files. For example, a Java-enabled Netscape browser 420 includes a Java API 422 and Java runtime system 424 supported by a host computer 426. When a Netscape browser 420 with a Java API 422 encounters an applet tag in an HTML Web page, a corresponding .class file for executing the applet is loaded into the host computer 426 and interpreted to a byte code file. A Java runtime system 424 executes the byte code file to display on the host computer 426 the Web page with the active content of the applet. See, J. Jaworski, *Java 1.1: Developer's Guide*, 2<sup>nd</sup> Ed. (Sams.net Publishing: U.S.A.: 1997), pp. 9 and 750 (incorporated in its entirety herein by reference).

Description of the example environment in these terms is provided for convenience only. It is not intended that the invention be limited to application in this example environment. In fact, after reading the following description, it will become apparent to a person skilled in the relevant art how to implement the invention in alternative environments.

### *Live Customer Service over the Web*

The operation of the present invention in providing live customer service over the Web is described with respect to example architectures shown in FIGS. 5A, 5B, and 6. An example routine 700 for providing live customer service is described with respect to FIGs. 7A-7B and 8A-8B. Another example routine for providing live customer service 1600 is described with respect to FIG. 16.

The present invention can provide different levels of customer service. "Express service" is a level of customer service where a customer query is routed to a CSR primarily on the content of the query. Express service can also include

routing based upon profiling and/or monitoring browsing data. "Full" or "Complete" service is a level of customer service where a customer is routed to a CSR based on customer input in query and a service form, profiling, or monitoring of browsing data. Combinations of Express and Full services providing different levels of customer service are also possible. The example of customer service is illustrative only. In general, the present invention can be used in any communication application.

Example screen displays of customer and CS windows used in express service and full customer service center embodiments of the present invention are shown in FIGs. 9-13. A specific example showing the use of the present invention in providing live customer service to support the booking of a cruise reservation is described with respect to FIGs. 14A-14O. An example of a supervisor interface monitoring the live customer service in FIGs. 14A-14O according to the present invention is described with respect to FIGs. 15A-15G.

FIG. 5A is a block diagram showing the components for providing live customer service over the Web according to one embodiment of the present invention. As shown in FIG. 5A, this embodiment includes a Web server 500, customer browser 520, customer service representative (CSR) browser 540, and database 550. Customer browser 520 and customer service representative (CSR) browser 540 can each be coupled to Web server 500 through respective communication links 501, 502 over any network or combination of networks, including but not limited to, the Internet. Database 550 is accessed by customer service agent program 510 and/or CSR browser 540 and can store any type of data or knowledge base related to providing customer service as described further below. FIG. 5A is an example arrangement only. Other arrangements can be used. For example, the CSR and CSR browser 540 can be located at Web server 500.

According to the present invention, Web server 500 includes a customer service center agent 510. Web server 500 also includes a memory 530 for storing data addressed at Web site 532. Web site 532 further includes active content such as, a service applet 534. In this way, Web site 532 is enabled to provide live

customer service in coordination with customer service center agent 510. The enabling of the customer browser for service is determined by customer service center agent 510 and service applet 534 as described further below. When service-enabled, customer browser 520 displays a customer service window.

5 Likewise, CSR browser 540 can display a CSR service window. The content of the customer service window and the CSR service window varies under the control of customer service center agent 510 in accordance with the level of customer service being provided.

FIG. 5B shows an example architecture for providing live customer service according to the embodiment of FIG. 5A in more detail. Customer service agent 510 is preferably implemented on server 505, which in one embodiment is distinct from the Web server 500. Server 505 is coupled to databases 550 including Oracle, Lotus Notes, DB2, SQL Server, and other Relational Database Managements systems (RDBMS), or non-relational database systems. Server 505 communicates with Mail Gateway 592 and Fax/Pager Gateway 594. Server 505 is also coupled through Web server 500 over the Web to customer browser 520, CSR browser 540, a Supervisor browser 560, and a Site Designer browser 580. Customer service agent 510 performs dialog or call management, service process management, knowledge management and customer interaction in accordance with the type of support. Such support can include either express service and/or a full customer service center as described further below.

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As shown in FIG. 6, an example customer service agent 510 includes service manager 610, HTTP communicator 611, matcher 612, and dialog manager 618 coupled to via a bus or network to pending customer queue 613, CSR queue 614, and matched customer queue 616. Other queues (not shown) can be added such as queues for storing customer queries in different stages of processing or different status (i.e., Waiting, Processing, Escalated, Alert, On Hold). Service applet 534 is downloaded to customer browser 520 and executes to provide HTTP communicator 621, service window manager 622, and persistent polling unit 624.

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CSR browser 540 includes HTTP communicator 641, CSR service window manager 642, and answer search engine 644.

5       Service window manager 622 manages the content and display of the customer service window on the customer browser 520 as described herein. CSR service window manager 642 manages the content and display of the CSR service window on the CSR browser 540 as described herein.

10       Persistent polling unit 624 polls the web site after the query is input in the customer service window. The polling allows a customer to be notified while the customer is browsing the Web that a CSR has chosen to respond to the query input by the customer. In this way, a quasi-persistent communication link can be established between a browsing customer and a server (and a CSR) even in a Web environment using HTTP where communication between a browser and a server occurs as a series of discrete temporary connections as described further below.

15       HTTP communicators 611, 621, and 641 each serve to encapsulate messages being sent over links 500 or 501 into HTTP and to de-encapsulate the encapsulated messages received over links 500 or 501. Such encapsulation and de-encapsulation allows on-line, live customer service according to the present invention to be provided through Internet firewalls or similar or other security devices (including intrusion prevention and detection devices) as described in  
20       further detail below with respect to FIG. 17. Customer service agent 510 can automatically detect when a customer is behind a firewall and initiate the use of HTTP encapsulation/de-encapsulation accordingly. Otherwise, if a customer is not behind a firewall, a port-to-port direct communication socket connection can be made in which case HTTP communicators 611 and 621 are not used.  
25       Similarly, customer service agent 510 can automatically detect when a CSR is behind a firewall and initiate the use of HTTP encapsulation/de-encapsulation accordingly. Otherwise, if a CSR is not behind a firewall, a port-to-port direct communication socket connection can be made in which case HTTP communicators 621 and 641 are not used.

The operation of any of the architectures shown in FIGs. 5A, 5B and 6 is now described in further detail with reference to the example routine 700 shown in FIGs. 7A-7B and 8A-8B and the example screen displays in FIGs. 9 to 13.

FIGs. 7A and 7B show a routine for providing live customer service 700.

5 First, a customer visits (i.e. surfs to) live CS enabled Web site 532 by inputting a URL (step 705), or via any other surfing technique or mechanism. Web site 532 is enabled by Web server 500 according to the present invention to provide live customer service. For example, Web site 532 can include active content, e.g., a Java applet, that loads in the background of customer browser 520. This active  
10 content is also referred to as a "service applet." In the example of FIG. 6, the service applet 534 loads and runs (or causes to be loaded and executed) HTTP communicator 621, service window manager 622, and persistent polling unit 624 in customer browser 520.

Next, a determination is made on whether the customer qualifies for live  
15 service (step 710). The specific criteria used for qualifying a customer for live service can vary depending upon a particular business application and need. For example, only customers having a known status may qualify. In this case, service applet 534 determines customer status and sends the status data to service manager 610. Service applet 534 determines whether a customer status is known,  
20 for example, by evaluating whether (i) a customer logged on using a known account number or other forms of identification or whether (ii) data in the computer supporting customer browser 520 exists that verifies that the customer is a known entity (e.g., by reading cookies or data files). Service manager 610 compares the status data obtained from service applet 534 (e.g., account  
25 information or cookie data) with service server records in database 550 to determine whether the customer status is sufficient, i.e. whether the customer is known. Any other qualification methodologies can be used. In other embodiments, step 710 is not performed (such that all customers are qualified for live CS).

30 If the customer does not qualify, the customer may be sent to a first-time user registration form (step 715). A registration form is displayed on the

customer browser to allow the customer to enter registration information (name, address, and other data for generating an account or service no.). For example, cookie or magic cookie data can be stored when a customer registers in step 715 or in general visits Web site 532 for the first time.

5        If the customer qualifies, then service manager 610 enables the customer for live customer service (step 720). What this means is that the service manager 610 will respond if service is requested by the customer browser 520, or will prompt the customer for help if needed. Such a prompt is issued based on browsing data and/or profile data gathered in steps 730 and 740 below. For  
10        example, a prompt can issue when the browsing customer has delayed at the Web site or returned back to a Web page or when a high-profile customer has surfed to the site.

      In step 730, service applet 534 monitors the browsing activity of the customer and gathers browsing data. For example, service applet 534 can gather  
15        browsing data on the browsing actions taken, time spent on each browsing action, length of stay in each Web page, and the URL visited history. As would be apparent to a person skilled in the art given this description, any known technique can be used to read cookie or magic cookie data or other browsing data, and to gather browsing data in step 730. Accordingly, step 730 need not be discussed  
20        in further detail. See, e.g., C. Bayers, "The Promise of One to One (A Love Story)," *Wired*, May 1998 (pp. 130-134 and 184-87) (incorporated by reference herein).

      While the customer browses, service manager 610 generates and/or updates a customer profile (step 740). For example, a profile can be determined  
25        based on customer information gathered in qualification step 710 (Customer Account record etc.), the area of Web site 532 where customer is currently and other browsing data gathered by service applet 532 so far in step 730, and/or server records. For example, the customer profile can determine whether a customer is a high-margin/low-margin provider, and whether the interaction will  
30        be simple or complex.

In step 750, service manager 610 enables a customer service window to opened based on the customer profile. Different types of customer service windows can be used depending upon the customer profile and/or the type of customer service being provided. For example, the customer service window can be a service dialog window and/or a service form. As shown in FIG. 9, a customer service window 900 having a service dialog window can be displayed which allows the customer to input a query or request. The customer service window of FIG. 9 is helpful for an express customer service embodiment where a CSR and customer simply exchange text questions and answers. The customer service window can also be provided with additional fields to allow a customer to add additional information that further optimizes customer service, such as, a field for entering an e-mail address, or a template with fields related to customer service details. Customer service window 900 includes such an e-mail address field 910.

FIG. 10 shows alternative customer service window 1000 having a top half for entering queries or requests and a bottom half representing a service form for entering additional service details relevant to the Web site content. For example, a travel reservations web site might include relevant information, such as, customer name, company information, what is wanted to talk about, a budget, number of travelers, etc.

FIG. 11 shows examples of authorization and registration forms which might be initially provided at the customer browser 520. Display 1100 is an authorization form for a user to enter user name and password information. Display 1110 is a registration form used to allow a first time user to register and to allow previously registered customers to input service reference numbers. In this way, previous customer profile information is quickly retrieved.

The customer service window can also let a customer select the type of customer service wanted. For example, a menu bar or buttons can be added to allow a customer to indicate whether he or she wants a question answered or would like to talk to a CSR. Authorization for the type of customer service a customer can receive can be provided by service manager 610 based upon the

browsing data gathered in step 730 and/or the customer profile generated in step 740. In this way, the level of live customer service to be provided can be regulated.

5 In one example, service manager 610 instructs the service applet 534 (and service window manager 622) whether a customer can enter queries or can request a CSR in a full customer service center. In this way, a company hosting the live CS enabled Web site 532 can regulate customer service according to a policy of the company. For example, higher priority customers or those more likely to be profitable can be given the choice of either entering a query and  
10 providing more service information in a service form. For instance, a customer service window for a high profile customer can include a query window and a service form, such as, shown in FIG. 10. Through the service form such customers may be matched directly with a live CSR (i.e. the customers can input the CSR name, if known), or be matched to a CSR based on information in the  
15 service form. The service form further allows more complex transactions to be handled more quickly such as electronic payment and purchases, reservations booking, etc.

Lower priority customers can be restricted to the option of entering a query at the outset. New, unknown customers can be provided an express service  
20 window such as shown in FIG. 9 where they can only input a query. The query can be routed quickly to a CSR for live customer service. In general, this saves processing at customer service agent 510 as only a query has to be processed. In this way, live CS can be provided to greater numbers of potential customers surfing Web site 532. CSR resources at CSR browser 540 are also saved for  
25 more valued customers or complex transactions. Such regulation of service can be important for active web sites which receive thousands of hits per day.

Further, with respect to step 750, a customer service window (such as, but not limited to, the examples discussed above) can be opened when a customer selects service or when service manager 610 instructs the service applet 534 that  
30 a customer at customer browser 520 should be offered service or that a customer needs service. For example, a qualified customer can select a "Live CS Help"

button that appears on a CS-enabled Web page from Web site 532 when the customer is intrigued or confused and wants further information on a product or service (see button in FIG. 14A). Alternatively, service manager 610 may determine from the browsing data in the customer profile that the customer needs help. In this case, the service manager 610 initiates the opening of the customer service window to invite the customer to interact with a CSR. For example, the service manager 610 may initiate a customer service window at customer browser 520 if a predetermined time period has lapsed or the URL history indicates that the customer is idle at the same Web page. Service manager 610 (or even a CSR) may also determine from the customer profile that the customer is a high priority customer and should be offered help.

As shown in FIG. 7B, a customer enters a query through the open customer service window (step 755). The term "query" broadly refers to any customer input related to customer service, or more generally, any communication of any type. For example, a customer can enter a query either directly within a service dialog window or as part of completing a form. Once a query is entered, customer browser 520 enters into a hold operation, also called EASYHOLD<sup>SM</sup> operation. During the hold operation, a customer can perform other activities, such as, browsing other Web sites, while waiting for a response to the query or doing other work (step 756). During EASYHOLD<sup>SM</sup> operation, persistent polling unit 624 at the customer browser 520 periodically (or non-periodically) polls service manager 610 to request a response, i.e., to determine if the service manager 610 holds a response to his or her query. Through service applet 534 the persistent polling unit 624 can operate in the background without interfering with customer browsing.

The query input in step 755 is received by customer service agent 510. Customer service agent 510 at web server 500 then intelligently routes the query to a CSR (step 770). Customer service agent 510 then manages a dialog between the customer at customer browser 520 and the CSR at the CSR browser 540 in preferably synchronized screens (step 780) (although asynchronous screens could

be alternatively used) until the dialog is complete (step 785). Customer service then ends (step 790).

### *Intelligent Routing*

FIG. 8A shows an example of step 770. Service manager 610 receives the query input in step 755 by the customer through a customer service window. Service manager 610 stores the query in a queue of pending customer queries 613 (step 872). Queue 613 can store the customer URL or other customer identification and the customer input (e.g., question or form input). CSR queue(s) 614 also store available CSRs.

Matcher 612 matches (or routes) a pending customer query in queue 613 to an appropriate and available CSR listed in queue 614 (step 873). Queue 614 may list any number of available CSRs assigned to handle particular types of queries (e.g. queries related to a particular type of customer, type of subject matter, or region).

In one embodiment, an available CSR first creates and enters a virtual room which can be thought of as service counter. Other CSRs create and work in other virtual rooms. Matcher 612 matches a customer query in express service to the CSR (i.e., to the service counter) which can provide the appropriate level of customer service. In one example, a CSR serves one customer at a time in a virtual room. If the virtual room or service counter is empty, then the customer query is put into the virtual room. Otherwise, the matched customer query waits (e.g., in a matched customer queue 616) until the virtual room becomes available. Of course, other CSRs can enter a virtual room to assist handling customer queries.

For example, one or more CSRs might be assigned to handle European sports cars sales. Each CSR creates and opens its own virtual room or service counter to answer queries. Each CSR is listed in queue 614 along the attributes of the CSR (e.g., these CSR attributes can be field(s) that describe European sports car sales). Matcher 612 then matches a pending query from queue 613 to

an available CSR in queue 614 which has criteria similar to the pending query. Matcher 612 may match a European sports car sales query to one available CSR handling European sports car sales in queue 614. Of course, a match need not be exact. A number of variations of matching criteria can be used depending, among  
5 other things, upon the level of service to be provided and the types of CSRs which are available. For instance, matcher 612 could match the query to a CSR that handles different queries about European minivan sales or North American sports cars. A CSR can also transfer the query to another CSR to facilitate matching.

10 Once a match is made, the query is then stored in a matched customer query queue 616 corresponding to the virtual room of the matched CSR (step 874). Matched customer queue 616 can be accessed by the appropriate matched CSR. If the virtual room is empty, then the query is immediately handled by the CSR. Otherwise, the query can wait in matched customer query queue 616 until  
15 it is serviced in turn by the CSR. For example, matcher 612 may route the query and service form information to a matched customer queue 616 which is read by a CSR in a virtual room. In the above European sports car example, if matcher 612 matches the query about a European sports car with an available CSR, then the query is routed to matched customer queue 616 (along with other European  
20 sports car or related queries from other customers). The available CSR in the virtual room (or other CSRs who enter the room) can look at the contents of matched customer queue 616 to select the next query to answer (see the example of FIGs. 14I and J).

25 Other examples are described to further illustrate the operation of steps 873 and 874. A query gets matched to a CSR based on a number of factors, such as, but not limited to: content, context, question, and/or qualifications. "Content" relates to the content of a query or service form information. For example, a query can be made at a designer shoe web site that specifies a question about available running shoes and provides service form information such as credit card  
30 information or shoe size. Matcher 612 reads the term "running shoes" in the question and any service form information (credit card information or shoe size)



and matches the query to a CSR listed in queue 614 having criteria related to running shoes. The running shoe query is then routed to a matched customer queue 616 corresponding to the virtual room of the CSR handling running shoes questions.

5 "Question" refers to the special case of the content of a question posed in a service dialog window of a customer service window. For example, if a query is made about available running shoes, matcher 612 reads or parses the term "running shoes" in the question and matches the query to CSR which can handle running shoes questions. The running shoe query is then routed to a matched  
10 customer queue 616 corresponding to the virtual room of the CSR handling running shoes questions.

"Context" relates to the context of the query or service form information in light of the Web site and page (URL address) at which the query is made. For example, if a query is made about available running shoes at a department store  
15 web site displaying a shoe department advertisement, matcher 612 reads the URL address associated with the shoe department and matches the query a CSR handling customer service for the shoe department. The query can be further routed to a matched customer queue 616 serviced by the CSR handling service for the shoe department (or directly to a browser of the CSR handling the shoe  
20 department).

"Qualification" relates to status data, browsing data, and/or profiling data that has been gathered as described above with respect to steps 710, 715, 730 and 740. For example, consider three prospective borrowers that surf to a mortgage  
25 lender web site and make a query regarding available mortgage rates. The first borrower is a repeat customer with cookie data identifying a high-margin account. Matcher 612 can read the cookie data to identify that the borrower is a repeat visitor with a high net worth and match the borrower to an experienced CSR.

The second borrower is a visitor who has surfed to a URL address related to profitable home sales. Matcher 612 can monitoring the browsing data (URL  
30 address for the profitable home sales) and identify that the borrower is interested

in a profitable product (home mortgages) and match the borrower to an experienced CSR in home sales.

5       The third borrower is a visitor who has entered profile information indicating a high net worth. Matcher 612 can read the customer profile and identify that the borrower is a good candidate for a large mortgage and match the borrower to an experienced CSR. If the customer profile indicates that the visitor does not warrant customer service in real-time, matcher 612 can also route the query (and customer identification) for later-time service, such as, an Email response.

10       These examples and the use of queues 613, 614 and 616 (or other storage device) and virtual room(s) are illustrative and not intended to limit the present invention. Other embodiments can use more queues and rooms (for example when traffic is high and a web site is getting many hits) or fewer or zero queues and rooms (for example when traffic volume is light and transactions are simple).  
15       In one example, each matched customer queue 616 is handled by a respective CSR (or a team of qualified CSRs). The invention is scalable in that additional CSRs, queues (pending customer queries queues 613, CSR queues 614, and matched customer queues 616), and virtual rooms, can be added to maintain continuous real-time response during service hours and to handle increases in  
20       service volume, that is, to handle a greater number of service requests and queries. Queries pending in matched customer queue 616 can also be ranked or prioritized based upon context, criticality, and/or question content. This way a CSR can readily select from a display in the CSR window the next most urgent query to answer.

25       Also, queues 613, 614 and 616 and a virtual room are optional. For example, if traffic volume is light or if only one CSR is handling a service area, pending customer queue 613, CSR queue 614, and/or matched customer queue 616 and the corresponding virtual room may be unnecessary. In that case, a query can be routed directly to a browser of the appropriate CSR.

## *Dialog Management*

Once a match is made (step 770), service manager 610 passes control to dialog manager 618 (step 875). Dialog manager 618 then manages the dialog between customer browser 520 and CSR 540 (step 780) until the dialog is complete (step 790). FIG. 8B shows an example of step 780. The CSR is enabled to open a CSR Window (step 881). For example, the CSR can visit Web server 500 and download a CSR service applet (not shown) that loads and runs (or causes to load and run) CSR window manager 642, answer search engine 644, and HTTP communicator 641 in the CSR browser 540. CSR window manager 642 executes to display a CSR window including a display of the contents of matched customer queue 616.

CSR selects a customer query in the matched customer queue 616 (step 882). CSR browser 540 then notifies dialog manager 618 that the CSR has selected the matched customer query. Dialog manager 618 receives the notification that the CSR has begun work on the query and sets a flag or other identifier to indicate that the pending customer query in matched customer queue 616 has been selected by a CSR. Because the HTTP connections between the customer browser 520 and web server 500 are likely closed (i.e. the customer is browsing other sites or performing other tasks), dialog manager 618 does not send a notification to the customer browser 520 until the persistent polling unit 624 at customer browser 520 next polls to check whether a response has been received. The delay in sending a notification to the customer browser 520 depends among other things upon the frequency of the persistent polling and can be minimal (i.e. less than a second or so to maintain real-time interaction with the customer at customer browser 520). See the persistent polling described further below.

Dialog manager 618 then notifies the customer at the next polling by the persistent polling unit 624 (step 883). For instance, the customer can be alerted with an audio and/or visual indication, such as, a "Beep" sound or a flashing. In this way, the customer is notified when a CSR has picked up a customer query

regardless of which Web site the customer has moved onto during the period of EASYHOLD<sup>SM</sup> browsing.

5       The CSR then analyzes the customer query and formulates a response (step 884). Any CSR response is sent to the customer through dialog manager 618 until the dialog is complete (step 885). Upon completion of interaction, CSR bids good bye if the customer is satisfied with interaction, or may escalate the level of service if the dialog needs to be transferred to another operator. CSR may also put the Customer on hold, or recommend a solution so that customer may come back for another interaction without any interruption. When the transaction is complete, the CSR may E-mail a transcript to the customer, and/or  
10       update the database 550 (i.e., update account information and update service history including recording questions asked and answered). Alternatively, customer service agent 510 can automatically E-mail a transcript to the customer, and/or update the database at the end of a service call to minimize the burden on  
15       a CSR.

      The CSR is aided in selecting a customer query in step 882 and in formulating an appropriate response in step 884 by tools and information provided in the CSR window. In particular, when the CSR picks up a customer query, he or she can be presented with information related to the customer and the  
20       customer query, such as, the customer's name, URL, URL history, form data, a current query, past queries by the same customer, browsing data, legacy data (account information and purchasing habits), service history and any other data in the matched customer queue 616, the customer profile generated in step 740, and database 550.

25       Further, the CSR window allows a CSR to access recommended answers relevant to the customer query. Answer search engine 644 parses the customer query and isolates key terms. Answer search engine 644 then generates a list of recommended answers stored in a knowledge base which are associated with these key terms. The CSR can then select one or more of these answers and send  
30       to the customer in response to his/her query. Thereby, achieving a number of advantages, such as, efficiency, throughput, consistency of advice, etc.

A CSR can also select information to provide the customer from prestored scripts. These scripts can contain information (data files and other URLs) relevant to many queries and answers. A list of common answers or comments can also be provided separately, or as scripts or recommended answers. In this way, through the CSR window, a CSR can quickly provide informative answers to the customer. A CSR can easily push pre-stored information including data files and URLs to help the customer. CSR can directly input a reply to a query and/or can enter into a 1-1 dialog with the customer. An answer search engine 644 can also be run to generate a list of possible answers based on the query content or other input from the CSR.

FIG. 12 shows an example CSR window 1200. CSR window includes a menu bar having a Queue button 1201, Customer Details button 1202, Recommend button 1203, Update Customer button 1204, Scripts button 1205, and an Exit button 1205. As described above, pressing Queue button 1201 displays the contents of matched customer queue 616. Pressing Customer Details button 1202 displays further customer profile information. Pressing Recommend button 1203 displays a list of recommended answers either pre-stored answers or answers generated dynamically by Answer Search Engine 644 based on a particular query or CSR input. Pressing Update Customer button 1204 updates customer profile information. Pressing Scripts button 1205 displays a list of available scripts. Exit button 1205 can be pressed to exit CSR window 1200.

CSR window 1200 further includes a main window 1210 for displaying, among other things, status information for a dialog and the contents of messages (queries and responses) passed between the CSR and customer during a dialog. A response from the CSR can be input into input window 1212. The CSR can select a comment to be included as part of a response from a list of comments in a Comments window 1214. A list of active users in a service room (the CSRs) appears in a Users window 1216.

A bottom portion 1220 of the CSR window 1200 includes a window that lists each active "virtual" service room and the name of a CSR who owns the service room. Other windows are provided that allow a CSR to join a room, find

a room, or create a new room. Each room holds the one or more active CSRs which are handling a respective matched customer queue 616. Matcher 612 picks an available CSR (or in other words an available virtual room) to match to a query as described earlier. According to a further advantage of the invention, matcher 612 can further distribute queries across virtual rooms. In this way, matcher 612 not only matches queries to qualified CSRs but also helps to distribute queries to ensure a real-time, interactive customer service response is maintained.

CSRs can also move to between rooms to handle backlogged queries independent of the work of matcher 612. In other words, CSRs can enter more than one room. This allows a CSR to multiplex time spent on work routed from matcher 612 to the CSR and any outstanding work the matcher 612 may have routed to other CSRs. For example, a CSR can move and select from pending queries in the matched customer queue 616 (which matcher 612 matched to that CSR) and other queues in which the CSR may decide to serve (independent of matcher 612). This helpful when the CSR is experiencing a lull period. Such lulls can occur, for example, when the CSR has answered all pending queries to which it is matched or if the CSR is waiting for further input from a customer. The CSR can then move temporarily to handle other queries in another room (that is other queries that matcher 612 has routed to other matched customer queues being handled by other CSRs). For example, a European sports car CSR might enter a virtual room where CSRs are handling North American sports cars queries. The European sports car CSR can further scroll pending queries (and read pop-up balloons as shown in example FIG. 14J) to select one he or she can answer effectively.

FIG. 13 shows an example CSR window 1300 used for an express customer service embodiment where a CSR and customer simply exchange text questions and answers. CSR window 1300 only includes a field for a CSR to type an answer. Alternative embodiments are possible as CSR window 1300 could also include a menu bar and/or a window for managing service rooms as in FIG. 12 described above.

### ***Persistent Polling***

Typically, the HyperText Transport Protocol closes a connection between a browser and a server after a message is sent or received. To restore the HTTP connection, a browser must re-initiate contact with the server, that is, return to the same URL address of the server. Thus, to maintain a persistent link, a browser must generally remain at a given URL address of a server.

As recognized by the inventor, such a restriction can be detrimental to effective customer service over the Web. It is desirable that a browsing customer be able to make a request for customer service and still have the freedom to roam a vendor's site or other area interest. It is further desirable that a CSR be able to prompt the customer rather than having to rely upon a customer to take the initiative and return to a web site.

Thus, according to a further feature, persistent polling unit 624 polls the web site after the query is input in the customer service window. The polling allows a customer to be notified while the customer is browsing the Web that a CSR has chosen to respond to the query input by the customer. In this way, a quasi-persistent communication link can be established between browsing customer 520 and server 500 (and CSR 540) even in a Web environment using HTTP where communication between a browser and a server is limited to a series of discrete temporary connections. By "quasi-persistent" link, we mean a link which is made as result of polling according to the present invention.

### ***Through Firewalls: HTTP Encapsulation***

FIG. 17 illustrates an example of HTTP tunneling whereby encapsulated data can be passed in HTTP messages 1700 through firewalls over the Internet (and/or intranet). In particular, each HTTP communicator 611, 621, and 641 encapsulates data to be sent into a text message tagged and marked according to the HTTP protocol. Each HTTP communicator 611, 621, and 641 further deencapsulates messages which are received. The messages are stripped of HTTP protocol tags and fields to extract the encapsulated data.

In this way, on-line, live customer service can be provided to a wide community of customers including customers connected to the Internet through a firewall. FIG. 17 shows two Internet firewalls 1710 and 1720 which pass data encapsulated in a HTTP protocol message 1700. Such firewalls are set up to allow HTTP traffic to pass through TCP/80 port between a Web server and a proxy server. See, R. McGregor *et al.*, *Java Network Security*, IBM Machines Corp. 1998, chapter 11 "Firewalls; In and Out of the Net", pp. 169-194.

### *Security*

Because the invention can operate at an application layer using or compatible with HTTP, secure customer service over the Web can be provided using Web-based security techniques or devices that are known now or are developed in the future. In one preferred example, security for each of the communications over links 500 and 501 described above according to the present invention is provided through a secure socket layer (SSL). The secure socket layer is a widely used protocol for implementing cryptography in the Web. SSL can be invoked from within Java and is supported by current browsers (e.g., SSL v3.0 is implemented in Netscape 3.0 and higher and Microsoft Internet Explorer 3.0 and higher), as would be apparent to a person skilled in the art given this description. See, R. McGregor, chapter 12 "Java and SSL", pp. 195-199 and SSL protocol at <http://home.netscape.com/newsref/std/SSL.html> (each of which is incorporated by reference in its entirety herein). A secure protocol, such as, secure HTTP (S-HTTP), can also be used. See, L. Stein, at 36-47 (incorporated in its entirety herein by reference). In general, other compatible encryption protocols and security techniques can be used in addition to or instead of SSL and S-HTTP.



*Example of Live Customer Service Supporting On-Line Travel Reservations*

The practical advantages of the present invention in providing live customer service over the Web become even more evident in considering a common example in Web commerce: booking on-line travel reservations. As mentioned above, the Web has created a real-time information infrastructure. Today, consumers receive immediate responses to most of their electronic interactions. However, this infrastructure lacks a real-time customer support mechanism to go along with it. Instead of live customer service, on-line consumers must use e-mail links that take hours or even days to get a response from, and telephone numbers that require a person to turn off their Internet connection and use a phone line. This is especially problematic in the booking of on-line travel reservations where it is desirable that the context of a Web site not be lost and that an electronic transaction be tailored to meet an individual's own tastes and needs.

The present invention provides a way of channeling customer service live, in real time, over the WWW. Implications of using live customer service at a travel site are tremendous. For most ticketing, especially for vacations and cruises, consumers need personal consultation before going through such expensive and complicated purchases. Consumers can enter basic preferences today, such as price range, length of trip, and the destinations they'd like to go to. They can self-serve themselves by entering this information, but nearly everyone has many specific questions, and they want immediate answers.

As mentioned above the present invention can include but is not limited to, an Express Service and a Full Customer Service Center. For travel reservations in this example, a visitor is first provided with express service to allow a CSR to answer questions efficiently and in real-time (FIGs. 14A-14D). The customer is then transferred to a Full Customer Service Center to handle more complex booking and reservations (FIGs. 14E-14O).

For example, as shown in FIG. 14A, a Web site for making travel reservations when enabled for live customer service according to the present

invention includes a button for selecting an instant response. A first-time customer named Janet who browses the site and selects the button is presented with an Express Service Window. Janet can then input her query: "I get seasick. Which cabins are best for me?"; and press a send button (FIG. 14B). Janet can  
5 continue browsing until a response from a CSR arrives.

Janet's query is intelligently routed to a matched customer queue. For example, the query can be routed to a queue related to cruises. In this way, CSRs responsible for cruises and knowledgeable about cruise information can respond. Through a CSR window, a CSR opens the queue of pending queries including Janet's query. The CSR returns a response: "Welcome to our Cruise Booking Service! Cabins near the water-line offer the calmest rides." (See FIG. 14C). In  
10 this way, Janet receives a quick, personalized answer to her question instead of scrolling through a Frequently Asked Questions (FAQ) list, placing a separate phone call, entering a non-private chat room, or waiting hours or even days for an e-mailed response.

Janet and the CSR can continue to exchange messages. For example, Janet may respond, "Great! I'm almost ready to book, but I need more info on group rates." Answering this question is a more complex transaction and requires detailed customer information. Accordingly, the CSR may suggest a transfer to  
20 a Full Customer Service Center to allow more detailed input and service beyond instant messaging. For example, the CSR can send Janet a URL to transfer Janet to the Booking Service (see FIG. 14D).

When Janet visits the Booking Service URL, a service applet opens a registration form Service window on her computer in which a service reference  
25 no. or in which a first-time user can be identified and registered (FIG. 14E). Once Janet has registered, a service window is displayed which includes a dialog window and a form (FIG. 14F). Janet can scroll through the form and input a few personal details, such as, name, company name, phone number, e-mail address, region, month of travel, length of cruise, subject of question, and description of  
30 question or problem (FIGs. 14F and 14G). Thus, Janet can ask her more complicated questions. "Does the \$7,659-per-person rate apply for groups under

five, for Alaskan cruises?" (FIG. 14G). Once Janet sends her information, a message can be sent to her automatically informing her that "The Service Rep. is ready to serve you. Please wait until you see the first message from the Service Representative."

5           A CSR named James enters a virtual room and views a CSR window (FIG. 14H) and opens a Queues window that displays information on waiting customers (FIG. 14I). For example, the Queues windows can display information for region, month of travel, and time fields for different types of active customer status, Waiting, Escalated, Alert (FIG. 14I). James can select a particular  
10       customer he is considering handling. A balloon opens providing even more customer information, such as, the customer name and subject fields (FIG. 14J).

          James selects the customer and inputs a response (FIGs. 14K and 14L). To determine an appropriate response, among other things, James can select any option within the CSR window. James can select from a menu bar to view the  
15       customer profile, view recommend answers generated by a answer search engine based on the fields information input by Janet, update customer profile, select a script, and/or exit. James can also select a prestored comment to further build a desired message (FIG. 14K). James inputs response: "Yes, Janet, that rate applies. But we're almost booked for all June runs." (FIG. 14L).

20       Janet inputs that she wants to go ahead and book the cruise. James requests credit card information from Janet. (FIG. 14M). This is an advantage of a secure link.

          James can also select a script from a listing of scripts available in a knowledge database (FIG. 14N). This listing can be automatically pruned further  
25       so that James sees scripts which match the field information provided by Janet (i.e. cruises, Alaskan). James then pushes a script on pertinent cruise information for a first-time cruiser he selected.

          FIG. 14O shows the customer service window seen by Janet which includes the message display history in the upper dialog window and the script,  
30       "First Time Cruiser's Guide" sent by James in the lower window. In a few more exchanges with James, Janet can complete the entire transaction. James can then

push Janet a receipt and a detailed itinerary of the trip, just as if Janet were at a travel agency.

As mentioned with respect to FIG. 5B, a supervisor can also monitor many CSRs simultaneously through his or her own supervisor browser and supervisor agent 560. FIGs. 15A-15G show an example Supervisor Interface 1500 displaying different tracking functions for CSR activity in different subwindows: History of Queues; Distribution Over Queues; CSR Performance; and Today's Statistics (FIG. 15A). As shown in FIG. 15B, History of Open Queues subwindow displays the number of customers in a queue and their service status: waiting, being processed, escalated in service, on alert, or on hold. A history of the time customers have spent in a respective status is plotted in a line graph. Distribution Over Queues subwindow displays the average size of queues (i.e. the number of customers) for each service status: waiting, being processed, escalated in service, on alert, or on hold. A distribution of the number of customers for each respective service status is plotted in a line graph.

As shown in FIG. 15C, CSR Today's Performance subwindow lists each CSR by name. A line graph shows the average customer processing time per hour each CSR has achieved. The CSR Today's Performance subwindow further includes a pull-down menu that allows a supervisor to select to display information on the Average Processing Time Per Hour (shown in FIG. 15C), or information on the number of customers completed, accepted, recommended, escalated, or alerted (not shown). As shown in FIG. 15D, a Today's Statistics subwindow includes graphs on processing time and waiting time.

A supervisor can display a queue being serviced (FIG. 15E), and select a CSR to monitor his or her actions (FIG. 15F). For example, a supervisor can monitor the conversation between James and Janet, and speak to the CSR if necessary. As shown in FIG. 15G, the supervisor can open a Conversations Window and input a message: "Way to go, James! Keep on booking those cruises!"

*Example Computer Implementation of Invention*

The subject invention has been described above with the aid of functional building blocks illustrating the performance of specified functions and relationships thereof. The boundaries of these functional building blocks have been defined partly for the convenience of the description. Alternate boundaries may be defined so long as the specified functions and relationships thereof are appropriately performed. Any such alternate boundaries are thus within the scope and spirit of the claimed invention. These functional building blocks may be implemented by discrete components, application specific integrated circuits, processors executing appropriate software, and the like or any combination thereof. It is well within the scope of a person with ordinary skill in the art to develop the appropriate circuitry and/or software to implement these functional building blocks.

In particular, each of the components: web server 500, customer service agent 510, browser 520, and browser 540 can be implemented as software executing on its own respective processor or multi-processor computer system. An example computer system 1800 is shown in FIG. 18. The computer system 1800 includes one or more processors 1802, control logic 1804, storage device 1806, and communication interface 1808. A monitor 1810 and other input/output (I/O) devices 1812, such as, a keyboard, touch screen, mouse, printer, and/or speakers can also be provided. Each of these components 1802-1812 is coupled to a communication infrastructure 1814, such as, a data bus or network.

Processor(s) 1802 operate in accordance with control logic 1804. Control logic 1804 is preferably a computer program, such that processor(s) 1802 operate in accordance with instructions contained in the computer program. For example, web server 500, customer service agent 510, browser 520, and browser 540 can be implemented as software (control logic 1804) executing on its own respective processor or multi-processor (processor(s) 1802).

Storage device 1806 can be any type of memory, preferably random access memory (RAM), and can also include a secondary memory or removable storage

unit. Such a removable storage unit can be a floppy disk drive, a magnetic tape drive, an optical disk drive (CDROM), etc. that includes a computer usable storage medium having stored therein computer software and data. In alternative embodiments, secondary memory may include other similar means for allowing computer software and data to be loaded into computer system 1800. Such means can include, for example, a removable storage unit and an interface. Examples of such can include a program cartridge and cartridge interface (such as that found in video game devices), a removable memory chip (such as an EPROM, or PROM) and associated socket, and other removable storage units and interfaces which allow software and data to be transferred from the removable storage unit to computer system 1800.

Communications interface 1808 allows software and data to be transferred between computer system 1800 and external devices (not shown). Examples of communications interface 1808 can include a modem, a network interface (such as an Ethernet card), a communications port, a PCMCIA slot and card, etc. Software and data transferred via communications interface 1808 are in the form of signals which can be electronic, electromagnetic, optical or other signals capable of being received by communications interface 1808. These signals are provided to communications interface 1808 via a channel (not shown). For example, such a channel can be implemented using wire or cable, fiber optics, a phone line, a wireless link, and/or an radio-frequency (RF) link.

In this document, the terms "computer program product", "computer program medium" and "computer usable medium" are used to generally refer to media such as a removable storage device in storage device 1806 or carrier signals processed at communication interface 1808. Computer program products are means for providing software (e.g., computer programs) to computer system 1800.

Computer programs (also called computer program logic or control logic 1804) are generally stored in memory in storage device 1806 and executed therefrom. Computer programs can also be received via communications interface 1808. Such computer programs, when executed by processor(s) 1802,

enable the computer system 1800 to perform the features of the present invention as discussed herein. In particular, the computer programs, when executed, enable the processor(s) 1802 to perform the features of the present invention. Accordingly, such computer programs represent controllers of the computer system 1800.

In an example where the invention is implemented using software, the software may be stored in a computer program product and loaded into computer system 1802 using a removable storage drive in storage device 1806 or communications interface 1808. The computer control logic (software), when executed by the processor(s) 1802, causes the processor(s) 1802 to perform the functions of the invention as described herein.

Also, in another example, the functionality of the invention is implemented primarily in hardware using, for example, hardware components such as application specific integrated circuits (ASICs). Implementation of the hardware state machine so as to perform the functions described herein will be apparent to persons skilled in the relevant art(s) (for example, processor(s) 1802 and control logic 1804 then represent hardware state machine(s)). In yet another example, the invention is implemented using a combination of hardware, firmware, and/or software.

The present invention as described above with respect to FIGs. 1 to 15 and 17 to 18, includes, but is not limited to, the subject matter of a second embodiment described further below with respect to FIG. 16.

## *Second Embodiment*

### *Overview*

According to a second embodiment, a method and system allows visitors of a Web site (includes internal or external Web sites, in other words site on an intranet, the Internet, or extranet) to be instantly contacted by a representative of the entity hosting a given Web site, without requiring the visitor to move to any

special area. The connection to the representative maybe at the request of the visitor, maybe initiated by a representative either upon a visitor accessing a particular page or if the visitor meeting certain pre-defined criteria, or maybe initiated by a visitor accepting an invitation from an automated agent.

5           The advantage of this approach is that by visiting a Web site of an entity, a visitor has invited himself to an area to understand the products and services of the entity or the information provided by the entity. Since the entity is eager to sell the product to the customer or offer such information as found in the site, it makes sense to connect to the customer at an opportunity where it appears the  
10           customer is ready to converse with a representative. This can be done either based on the profile of the visitor (visitor works for a Fortune 500 company) or a criteria (visitor has spent 30 minutes understanding Product X). Once it has been determined that the visitor is ready to be contacted, a mechanism is used to make direct or indirect contact and get the interaction to begin.

15           The approach is also helpful even in situations where the entity managing a Web site does not have any commercial aspirations. The method and system described herein can be used to provide superior experience for visitors to a Web site, by providing for live interaction with a knowledgeable representative, by automatically detecting when such help is required and offering it at the right  
20           moment.

#### *Steps involved in connecting a representative to a Web Site Visitor*

The parties involved in using the system described are:

- a.       Customer: The visitor will be referred to as a customer, though  
25       the visitor may not have any intention to be a customer at the time of visiting the site or may leave the site without becoming one.
- b.       Agent: An automated set of computer programs that manages the following tasks: task of identifying target customers who are qualified enough to warrant a live interaction with a real representative, interfacing with the customer to help him make a decision to connect, identify and locate the representative



qualified to handle the customer, manage the queue of customers waiting to talk to their assigned representative, and facilitate the connection of the representative with the customer including locating the representative and notifying a customer wishes to speak to him. The Agent maybe optionally personified by using a human or robot oriented interface. For example the agent may announce to the customer that it is an automated program or pretend to be a real person who is making a connection (like a Receptionist helping a visitor to connect to the person they are visiting).

c. Representative: A person appointed by the Web site managers to help customers find product information, answer questions, and otherwise help in completing a sale of a product or service.

As shown in FIG. 16, the steps involved are:

- a. Visitor enters the site (step 1610)
- b. Agent starts monitoring what the customer is doing (step 1620).
- 15 c. Agent may prompt availability of help based on criteria (customer is fumbling or appears to be confused for instance) (step 1630).
- d. Agent continues to check if customer is qualified to warrant a commercial interaction (step 1640).
- e. If customer is qualified, agent initiates conversation with helpful comments and prompts for live connection to a representative (step 1642).
- 20 f. Customer accepts or declines the invitation (step 1650).
- g. If Customer accepts, Agent places Customer on hold, and locates a Representative qualified to assist the customer. (Step 1660). Location and notification maybe by phone, beeper, E-mail or other means.
- 25 h. If Representative is busy, Agent manages the queue of customers. (Step 1662). If Representative is not available, locates a representative using methods described in "Method and System for establishing and conducting instant meetings where users connect and communicate using a variety of text and voice-supported devices" below. (Step 1664).

- i. Agent connects the Representative to the Customer for instant interaction (step 1670).

*Description of the Method and System*

5 The System that will facilitate an instant connection for a Web site visitor to a representative will be a computer software program(s) and associated hardware, that will reside in a host system with input-output device. The Program will be loaded into the memory and will work with external systems, programs and hardware as and when required. The Program or System can be accessed or controlled from any device that can be directly or indirectly connected to the  
10 computer, and parts of the program will get loaded into such devices whenever required. The program will work with any device used to connect to a Web site (based on any internetworking protocol including but not limited to HTTP). Such device may be any audio-driven or text driven device including telephones, input-output device, hand-held organizers, television with input facilities (set-top box and input device attached to the television), computers, and other similar devices.

15 The Program will have access to a disk for storage and retrieval. All information required to connect a customer and representative automatically, including people information, history of current and previous meetings or interactions, general customer profiles, customer intelligence rules and other  
20 information on devices will be stored in the disk.

The System will also be connected to various hardware to provide the required connections to network with phone systems, television systems, radio, airwaves, Internet, and other networking systems.

25 Once the Program or System is active, it listens for the Web Server to get a request from a customer. Once the Web site page request comes in, the Agent Part of the Program creates a thread to monitor the customer. A thread is created for every single customer who visits the site.

*Visitor enters the site*

When the visitor enters the site, the agent program creates a dedicated thread for the visitor. This thread monitors every request made by the visitor (browser request) and logs to a memory or file. The agent may keep track of the customer by any of the following mode, if a secure site it notes and starts tracking by security certificate or ids, otherwise by network node id, IP address, host name or any other unique identifier.

*Agent starts monitoring what the customer is doing*

As the customer keeps making requests, the agent starts monitoring actively what the customer is doing. It may keep track of time spent on each page, the pattern of use, the direction of use, and the preferred areas in the Web site, and collect other data. These data is then used to evaluate various rules the Web site management may have set to evaluate a customer and decide on actions to be taken by the agent. The rules are defined in simple if-then conditions. For example, if customer goes back and forth through the same set of pages in quick succession, then it means he is confused. If customer is confused, Agent makes appearance and offers help.

*Agent may prompt availability of help based on criteria*

Based on the rules, the agent makes its appearance to a customer in the form of a visual interface at an appropriate time, which may include an animated persona, or may simply be a simple text oriented interface. The Agent downloads itself into the Web page and may be employed using any downloadable technology including but not limited to Java, ActiveX, or Push technologies.

If Customer is not deemed commercially inclined at this stage but found to be in a state of needing help, the agent may act as a courtesy person to provide help in guiding the customer. The interaction may involve a simple statement

like "I am Jill, your Courtesy Help Representative. If you would like to interact with a representative of this site let me know. If you have any questions, please type Help". If customer requests help, the agent may provide the required information.

5. *Agent continues to check if customer is qualified to warrant a real interaction*

After the agent has offered help for guiding the customer, the agent continues to monitor the customer for checking if customer reaches a state of needing help to facilitate a sale. The customer is deemed to be in a mental state of positively inclined to a sales pitch or talking to a representative.

10 If customer is qualified, agent initiates conversation with helpful comments and prompts for live connection to a representative.

Once the customer is deemed to have reached a state, where a commercial transaction becomes viable, or before that, the agent may prompt with a simple greeting. The agent then proceeds to interact with the customer to ask if the customer is interested in more information, has any questions, or would like to place an order. Depending on the response of the customer, the agent takes various actions, based on the rules set at the Web site. This may include attempting to help the customer through an automated agent, call the appropriate representative to take over, or go to a "hold-out as real pattern".

20 The hold-out as real pattern involves the agent pretending to be the real person and engaging in a conversation, especially if the customer is still not ready to buy, to minimize the cost of the interaction. However, if the agent detects the customer cannot be helped without the assistance of a live person, it will immediately locate and notify the suitable representative, and the interaction is taken over by the live representative. The customer is not given any formal cues as to the change in the person/agent handling the interaction.

25

***Customer accepts or declines the invitation***

If Customer is given a choice for the interaction with the agent, the customer may either accept or decline the invitation to interact with the representative or agent.

- 5           **If Customer accepts, Agent places Customer on hold, and locates a Representative qualified to assist the customer.**

10           If the Customer accepts the invitation to talk to a live representative, the agent may either continue to interact if it had given an impression of being a live person, or notify the customer that it will attempt to locate a live representative. Such notification to the customer may include expected waiting time, or an option of agent contacting the customer as soon as the representative is found. The second option allows the customer to do other tasks or continue browsing while they are on hold.

15           The agent then proceeds to check the database to find the suitable representative who is qualified to help the customer. Once it determines who the right person is, it employs methods and systems required for locating and notifying the representative of the customer in hold. Such notification may be using any device not limited to beeper, television, telephone including cellular and mobile, electronic mail, or facsimile.

- 20           **If Representative is busy, Agent manages the queue of customers.**  
Upon locating a representative if the agent finds out the representative is busy handling other customers, it will setup a queue and manage it. If a team of representatives is handling the interactions with customers, it will ensure the right person is serving the customers at the right time.

*Agent connects the Representative to the Customer for instant interaction*

Upon a representative becoming available, the agent will connect the customer and representative instantly. If the customer had requested notification, it will locate and notify them using the appropriate means including audio/visual notification, electronic mail, beeper or other suitable device. The representative and customer are now ready to begin the interaction.

The present invention, as described in embodiments above with respect to FIGs. 1 to 18, can be further used in combination with subject matter of a third embodiment related to establishing and conducting meetings as described further below. However, the present invention as described above with respect to FIGs. 1 to 18 is not intended to be limited to a combination with the subject matter of a third embodiment unless expressly recited in the claims. Further, the third embodiment relates to establishing and conducting meetings and can be used in a separate invention irrespective of the embodiments described above with respect to FIGs. 1 to 18.

*Third Embodiment**Overview*

Any person working even in a medium sized organization spends a lot of time in meetings everyday. The most common method to conduct meetings still remain face-to-face or over the phone. However, this method is very unsatisfactory when a person or persons (for the purposes herein a person will include an electronic agent acting on their behalf) need to connect with one or more persons or devices (including electronic agents) to get an opinion or resolve a matter urgently. Methods and systems are described to bring about a meeting of two or more people, where such persons could have access to a variety of devices, to allow them to communicate and conduct a meeting instantly.

A Method and System for establishing and conducting instant meetings where users connect and communicate using a variety of text and voice-supported devices is provided. Methods and systems are provided for establishing an instant meeting where many people can be invited at once and the meeting conducted  
5 instantaneously using a multitude of devices. The method and system would allow people to be identified, located, informed, setting up an acceptance mechanism, connect an invitee to the rest of the attendees, help the group communicate and conduct a meeting using a variety of devices which may include television, any input-output device such as a computer, hand-held devices,  
10 telephones etc.

*Steps involved in conducting a meeting instantly*

Any person (Person will include references to persons or electronic agents or devices that act on behalf of a person) wanting to establish a meeting in the present time (instantly) to conduct a conversation or communication has to follow  
15 one or more of the steps to connect instantly.

- a. Connect to the System to initiate and conduct the meeting
- b. Identify people to be involved in the meeting
- c. System locates the people to notify the invitation
- d. System invites the people to the meeting (Notification)
- 20 e. Processing the Acceptance or rejection of the person who was invited
- f. Connecting or facilitating the transportation of the participant to the meeting location using a suitable device
- g. Conducting the meeting which includes communicating using any  
25 device of choice

### *Description of the Method and System*

5       The System that will facilitate an initiator (initiator covers more than one person if more than one person initiate the meeting) will be a computer software program and associated hardware, that will reside in a host system with input-output device. The Program will be loaded into the memory and will work with external systems, programs and hardware as and when required. The Program or System can be accessed or controlled from any device that can be directly or indirectly connected to the computer. Such device may be any audio-driven or text driven device including telephones, input-output device, 10       hand-held organizers, television with input facilities (set-top box and input device attached to the television), computers, and other similar devices.

      The Program will have access to a disk for storage and retrieval. All information required to setup a meeting, including people information, history of current and previous meetings, information on devices will be stored in the disk.

15       The System will also be connected to various hardware to provide the required connections to network with phone systems, television systems, radio, airwaves, Internet and other networking systems.

      Once the Program or System is active, it listens for any request from an initiator to setup a meeting. Such a request could be placed through any networked source for receiving the information - a phone call, for instance. In 20       such a case, the phone call will be picked up by a standard interface software and will communicate the contents of the call to the System. The System would then respond to the request and respond accordingly.

### *Method for initiator to connect to the System to initiate and conduct a meeting*

25       The initiator will connect to the system using any device capable of input-output of voice and/or text. The System would confirm the identity of the initiator using a security mechanism which may involve a password or other authentication scheme.



Once the initiator is authenticated a menu of choices is displayed or announced. Options will include setting up a meeting, querying information on past meetings, looking up people information etc.

*Method for identifying people who need to attend a instant meeting*

5           If the initiator chooses the option of setting up an instant meeting, the system would help in identifying the people who need to attend the meeting:

System will accept list of people or groups (Sales team, Plant managers) from the initiator

Propose list of people suitable for the meeting based on:

10           past history

topic provided

people who have notified the system they would like to be notified of any meeting that takes place based on the criteria of topic, attendees, other keyword.

15           The system would finalize the list of people who need to identified by allowing initiator to add or delete people to the list. It would also prompt known issues with attendees: vacations, known absence, lack of information to contact them. The initiator can also demand the system to list how the system proposes to notify attendees and modify the information for optimal results. Once the attendee accepts the final list of attendees the system would attempt to proceed to notify the attendees.

20

*Method for Notifying attendees who need to attend the instant meeting*

For each attendee who needs to attend the meeting, the system would identify an optimal method to connect and notify instantly. The system would use past history as one factor in making this decision. It may also use a cost optimization module to figure the cost-effective method to connect to the attendee.

25

- 50 -

The System would proceed to first figure out the options available to connect to each attendee:

Check if initiator has provided any preferred mode of notification

Check database of people in the system to get instant contact information.

5 This may involve finding the contact information to connect to any device that may be in proximity to the person who needs to be contacted. In the event, the attendee has no suitable device nearby it will attempt to locate known list of people who are known to the attendee to inform them. Any device with ability to notify the message can be used to notify the attendee. The device should have  
10 a display unit to display the message, or an audio unit to announce the message, or both, with the ability to receive data from an external source. A device can also be built specifically to handle this notification. Known devices that can handle this task include telephones including mobile/cellular phones, mobile two-way radios, hand-held computing devices including organizers, television, computers,  
15 any input-output device, beepers, fax machines.

The system may also used public databases of known locations, past and present, and may also connect to other external systems that provide location services to locate a device capable of notifying the attendee.

20 The system would notify the attendee with the following information either in speech mode or display the message depending on the capabilities of the device that is located near the attendee:

***Method for processing attendees acceptance/rejection instant meeting invitation***

25 If the attendee has a device capable of notifying the system of his acceptance or rejection of the meeting, the system would process the information received from the attendee and take further action.

Such decision would be passed back to the initiator to take further steps. For example, if key people do not attend the meeting, the initiator may decide to

postpone or cancel the meeting. In such a case, the system would automatically notify all attendees of such action, based on the preference of the initiator.

*Method for facilitating attendees to connect to the instant meeting using a suitable device*

5           Once the notification has been processed and if the attendee accepts the invitation, the system would proceed to provide relevant information for the attendee to make a decision on the most useful device to use to join the meeting.

10           If the notification was done using a device that is not capable of two-way communication, then the system would help the attendee figure out the best way to connect to a suitable device. Such information may involve automatic steps for helping the attendee connect to the meeting using an appropriate device quickly. For example, if user received information by beeper that is not capable of two-way interaction, the beeper message may ask the attendee to check his electronic mail for further information. The electronic mail message sent to the  
15           attendee would provide an embedded program or link to connect to the meeting.

          If attendee received the notification through a device capable of input-output that is supported by the system, the system would immediately connect the attendee to the meeting room. Such a meeting room would exist in the system in the virtual sense and the attendee would be able to identify the  
20           presence of others in the room. The system would use an appropriate security mechanism to confirm the identity of the attendee before permitting the entrance to the meeting room.

*Method for facilitating attendees to communicate during the instant meeting using a suitable device*

25           The system facilitates an attendee to communicate using any supported device that is capable of transmitting text that was created using an input device or spoken words. The System would handle the required text-to-speech or speech-to-text conversion, including other input that can be used to construct the words to speech, to display in the appropriate manner for all participants in the

meeting. The System would also proceed to translate the communication to the appropriate language before providing it to a given attendee.

For example, A uses a standard computer and initiates a meeting inviting B and C. The system determines B can be contacted through his television set since he is watching the television (this is determined by the presence of an active connection between a set-top box attached to the television and an external network), and C is sitting in a park with his mobile phone (determined by C's mobile phone number being available in the database). The System interrupts B during the television program, with an appropriate notification to join the meeting. B accepts the invitation and finds himself in a virtual room. B decides to use a keyboard connected by infrared to the output box connected to the television. C receives a call from the System informing of the meeting. C accepts the call and decides to use the phone. Once the meeting is in progress, A and B use the keyboard as an input device and read the conversation of the others in their display unit (for A the display unit is his monitor attached to his computer, for B the display unit is the television). C hears all the conversation, as the system converts all the written words to speech and announces it in a suitable manner for C to distinguish between A and B. To communicate, C speaks into his phone. The System automatically converts C's spoken words to text and displays it to A and B.

### *Conclusion*

While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not limitation. It will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined in the appended claims. Thus, the breadth and scope of the present invention should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

*What is Claimed is:*

1. A method for providing live customer service between a customer and a customer service representative (CSR) in real-time over the World Wide Web, comprising the steps of:
  - 5 (a) enabling a Web site for live customer service (CS);
  - (b) enabling a customer service window to be displayed on a browser of the customer visiting the CS enabled Web site;
  - (c) receiving a query input in the customer service window by the customer;
  - 10 (d) routing the received query to a CSR;
  - (e) enabling a CSR window including the received query to be displayed on a browser of the CSR; and
  - (f) sending a response input in the CSR window by the CSR to the browser of the customer while the customer browses the World Wide Web.
- 15 2. The method of claim 1, further comprising the steps of:  
determining whether a customer browsing the CS enabled Web site qualifies for live customer service prior to said enabling step (b); and  
enabling only qualified customers browsing the CS enabled Web site to be provided live customer service over the World Wide Web according to steps  
20 (b) to (f).
3. The method of claim 2, wherein said customer qualifying determining step comprises the step of determining whether a customer status is known.
- 25 4. The method of claim 1, further comprising the step of:  
gathering browsing data on the browsing activity of the customer.

5. The method of claim 4, further comprising the step of:  
prompting the customer for help based on the gathered browsing data.

6. The method of claim 1, further comprising the step of:  
generating a customer profile.

5 7. The method of claim 1, further comprising the steps of:  
determining the level of customer service to be provided based at least  
upon one of the following: browsing data gathered while the customer browses  
the CS enabled Web site; a customer profile; and a policy of the CS enabled Web  
site; and

10 determining the contents of the customer service window based on the  
level of customer service to be provided.

8. The method of claim 1, wherein said customer service window  
enabling step (b) enables at least one of a service dialog window and a service  
form to be displayed on a browser of the customer visiting the CS enabled Web  
15 site.

9. The method of claim 8, wherein said customer service window  
enabling step (b) enables a service dialog window to be displayed on a browser  
of the customer visiting the CS enabled Web site when an express interactive  
customer service is provided and enables a service dialog window and a service  
20 form to be displayed on a browser of the customer visiting the CS enabled Web  
site when a full interactive customer service is provided.

10. The method of claim 8, wherein said customer service window  
enabling step (b) initially enables a service dialog window to be displayed on a  
browser of the customer visiting the CS enabled Web site to exchange messages  
with a CSR; and further comprising the step of enabling a service dialog window  
25 and a service form to be displayed on the browser of the customer visiting the CS

enabled Web site when a transaction is to be completed which is more complex than exchanging messages.

11. The method of claim 1, further comprising the steps of:

polling the Web site after the query is input in the customer service window including issuing polling messages; and

notifying the customer while the customer is browsing the Web that a CSR has chosen to respond to the query input by the customer; wherein said notifying step notifies the customer in response to a polling message sent in said polling step.

12. The method of claim 1, wherein said routing step comprises intelligently routing the query to a CSR based on at least one of the following criteria: content, context, question, and qualifications.

13. The method of claim 12, wherein said intelligently routing step includes the steps of:

storing the query and a corresponding customer URL in a queue of pending customer queries;

matching the stored query to a CSR based on at least one of the following criteria: content, context, question, and qualifications; and

storing the query in a service queue capable of being displayed in the CSR service window by the matched CSR.

14. The method of claim 1, further comprising the step of analyzing the query against a knowledge base to generate a list of recommended answers for display in the CSR window.

15. The method of claim 1, wherein said CSR window enabling step (e) further comprises enabling a CSR window to be displayed that allows a CSR

to access at least one of the following: data in the customer profile, a list of scripts, and a list of recommended answers.

16. The method of claim 1, wherein said CSR window enabling step (e) further comprises enabling a CSR window to be displayed that include a service dialog window, a comments window, a response entry window, and a menu bar having at least the following group of buttons: Queue button, Customer Details button, Recommend Answers button, Update Customer Profile button, and a Scripts button.

17. The method of claim 1, further comprising the step of:  
managing a dialog between the customer and the CSR once a CSR has picked up a customer.

18. The method of claim 1, further comprising the steps of:  
encapsulating the query input in the service window into a HyperText Transport Protocol (HTTP) message prior to sending the query input from a computer at the customer browser; and  
encapsulating the response sent in sending step into a HTTP message prior to sending the response to the computer at the customer browser; and  
de-encapsulating the HTTP message received at the computer at the customer browser to extract the response; whereby communication can occur through a firewall that allows HTTP traffic to pass.

19. The method of claim 1, further comprising the step of supervising communication between the customer and the CSR.

20. The method of claim 19, wherein said supervising step further comprises tracking customer service performance.



21. The method of claim 1, wherein said Web site enabling step (a) comprises the steps of:

providing a customer service agent at the Web server for executing steps (b) to (f); and

5 providing active content in a Web page at the Web site for executing at the customer browser to support customer service.

22. The method of claim 1, wherein said active content providing step provides a service applet that executes to read customer profile data, to encapsulate and deencapsulate messages in HTTP, and to poll the Web site.

10 23. A system for providing live customer service between a customer and a customer service representative (CSR) in real-time over the World Wide Web, comprising:

(a) means for enabling a Web site for live customer service (CS);

(b) means for enabling a customer service window to be displayed on  
15 a browser of the customer visiting the CS enabled Web site;

(c) means for receiving a query input in the customer service window by the customer;

(d) means for routing the received query to a CSR;

(e) means for enabling a CSR window including the received query  
20 to be displayed on a browser of the CSR; and

(f) means for sending a response input in the CSR window by the CSR to the browser of the customer while the customer browses the World Wide Web.

24. The system of claim 23, further comprising:

25 means for determining whether a customer browsing the CS enabled Web site qualifies for live customer service prior to said enabling by said (b) enabling means; and

means for enabling only qualified customers browsing the CS enabled Web site to be provided live customer service over the World Wide Web.

25. The system of claim 23, further comprising:

means for gathering browsing data on the browsing activity of the customer.

26. The system of claim 25, further comprising:

means for prompting the customer for help based on the gathered browsing data.

27. The system of claim 23, further comprising:

means for determining the level of customer service to be provided based upon at least one of the following: browsing data gathered while the customer browses the CS enabled Web site; a customer profile; and a policy of the CS enabled Web site; and

means for determining the contents of the customer service window based on the level of customer service to be provided.

28. The system of claim 23, wherein said customer service window enabling means (b) enables at least one of a service dialog window and a service form to be displayed on a browser of the customer visiting the CS enabled Web site.

29. The system of claim 28, wherein said customer service window enabling means (b) enables a service dialog window to be displayed on a browser of the customer visiting the CS enabled Web site when an express interactive customer service is provided and enables a service dialog window and a service form to be displayed on a browser of the customer visiting the CS enabled Web site when a full interactive customer service is provided.

30. The system of claim 23, further comprising:

means for polling the Web site after the query is input in the customer service window including issuing polling messages; and

means for notifying the customer while the customer is browsing the Web that a CSR has chosen to respond to the query input by the customer; wherein said notifying means notifies the customer in response to a polling message sent by said polling means.

31. The system of claim 23, wherein said routing means include:

means for storing the query and a corresponding customer URL in a queue of pending customer queries;

means for matching the stored query to a CSR based on at least one of the following criteria: content, context, question, and qualifications; and

means for storing the query in a service queue capable of being displayed in the CSR service window by the matched CSR.

32. The system of claim 23, further comprising:

means for analyzing the query against a knowledge base to generate a list of recommended answers for display in the CSR window.

33. The system of claim 23, wherein said CSR window enabling means (e) enables a CSR window to be displayed that allows a CSR to access at least one of the following: data in the customer profile, a list of scripts, and a list of recommended answers.

34. The system of claim 23, further comprising:

means for managing a dialog between the customer and the CSR once a CSR has picked up a customer.

35. The system of claim 23, further comprising:

means for encapsulating the query input in the service window into a HyperText Transport Protocol (HTTP) message prior to sending the query input from a computer at the customer browser; and

5 means for encapsulating the response sent in sending step into a HTTP message prior to sending the response to the computer at the customer browser; and

means for de-encapsulating the HTTP message received at the computer at the customer browser to extract the response; whereby communication can occur through a firewall that allows HTTP traffic to pass.

10 36. The system of claim 23, further comprising:

means for supervising communication between the customer and the CSR including; and

means for tracking customer service performance.

15 37. A system for providing live customer service (CS) between a customer and a customer service representative (CSR) in real-time over the World Wide Web (WWW), comprising:

a first computer that supports a customer browser;

a second computer that supports a CSR browser;

20 a memory that stores a CS enabled Web site having active content that executes in said first computer to support the live customer service; and

a server linked to said first and second computer over the WWW;

wherein said server executes a customer service agent in response to a customer browsing the CS enabled Web site stored in said memory; and

25 wherein the customer service agent enables a customer service window to be displayed by the customer browser, receives a query input in the customer service window by the customer, routes the received query to a CSR, enables a CSR window including the received query to be displayed on a browser of the CSR, and sends a response input in the CSR window by the CSR to the browser of the customer while the customer browses the World Wide Web.

38. The system of claim 37, wherein the customer service agent further comprises:

a service manager;

a matcher; and

5 a dialog manager; wherein:

the service manager enables the customer service window to be displayed by the customer browser and stores the query input in the customer service window by the customer in a first queue,

10 the matcher matches the stored query in said first queue to a CSR and stores transfers the query into a second queue,

the service manager enables a CSR window including the query stored in said second queue to be displayed on the browser of the CSR and transfer control to a dialog manager after the matcher has stored the query in said second queue; and

15 the dialog manager sends the response input in the CSR window by the CSR to the browser of the customer while the customer browses the World Wide Web.

39. A computer program product comprising a computer useable medium having computer program logic recorded thereon for enabling at least one processor in a server to provide live customer service (CS) between a customer and a customer service representative (CSR) in real-time over the World Wide Web (WWW), said computer program logic comprising:

20 first computer readable program code means for enabling said at least one processor to route a query input in a customer service window by the customer to a CSR; and

25 second computer readable program code means for enabling said at least one processor, in response to a polling by a computer of the customer, to send a response input in a CSR window by the CSR to the browser of the customer; whereby a customer can browse or perform other tasks after the query is input in the cusotmer service window.

30

40. A method for providing live customer service in real-time over the World Wide Web, comprising the steps of:

enabling a customer service window including a dialog window to be displayed while a customer browses a Web site;

5 receiving a query entered in said dialog window by the customer;

routing the received query to a customer service representative; and

10 in response to a polling by a computer of the customer, sending a response to the received query from the customer service representative to the customer; whereby a customer can browse or perform other tasks after the query is input in the customer service window.

41. A method for providing customer service over the World Wide Web, comprising the steps of:

enabling a customer service window including a service form to be displayed while a visitor browses a Web site;

15 receiving customer information entered in fields of the service form by the visitor;

routing the visitor to a customer service representative based at least in part on said received customer information; and

20 establishing a person-to-person connection between the visitor and the customer service representative over the World Wide Web (WWW).

42. The method of claim 41, wherein said establishing step comprises: establishing a secure person-to-person connection between the visitor and the customer service representative over the WWW.

25 43. The method of claim 42, wherein said establishing step comprises: establishing a quasi-persistent link between the visitor and the customer service representative over the WWW.

44. A method for providing customer service over the World Wide Web, comprising the steps of:

monitoring a visitor who is browsing a Web site;

routing the visitor to a customer service representative; and

5 establishing a person-to-person connection between the visitor and the customer service representative over the World Wide Web.

45. The method of claim 44, wherein:

said routing step comprises routing the visitor to a customer service representative while the visitor browses the WWW; and

10 said establishing step comprises establishing a person-to-person connection between the visitor and the customer service representative while the visitor browses.

46. A method for providing communication between first and second users, comprising the steps of:

15 monitoring the first user who is browsing a Web site;

routing the first user to a second user; and

establishing a person-to-person connection between the first and second users over the World Wide Web.

47. A method for determining need for live interaction with a Web site visitor and facilitating such interaction comprising the steps of:

20 (a) determining if Web site visitors need assistance to use the Web site;

(b) determining if a Web site visitor is in a state to hear a sales pitch, or ready to place an order or perform any other task;

25 (c) automatically making contact with a Web site visitor using a live representative or an automated agent based on any criteria which may include: enabling commerce on the Web or providing a better experience in the Web site;

(d) accepting and processing the decision of the Web site visitor during the facilitation of instant connections;

5 (e) interacting with a visitor using an automated agent (computer programs) wherein the agent pretends to be a real person and interacts with the customer; and detecting when the agent can no longer handle the customer, and smoothly passing it on to a live representative without the customer being aware of such change; and

10 (f) facilitating the notification to a customer, when the customer is on hold waiting for a representative, using a variety of devices when the representative is ready to interact with the customer.

48. A method for establishing and conducting instant meetings where users connect and communicate using a variety of text and voice-supported devices comprising the steps of:

15 locating people and notifying them of an instant meeting about to occur, by locating a device closest to the people attending the meeting capable of accepting a notification, and making such notification;

accepting and processing the decision of each person notified;

facilitating an invitee who wishes to participate in the meeting to be connected to the meeting using a suitable device;

20 facilitating the communication in the meeting where participants use a variety of devices to communicate to each other, by automatically converting spoken words to text and text to spoken words and communicating the results to each attendee in the required form in either text or spoken words including translating to the required language for a participant to understand the proceedings; and

25 providing the requisite security to authenticate only authorized users are participating in an instant meeting where multiple devices are employed.



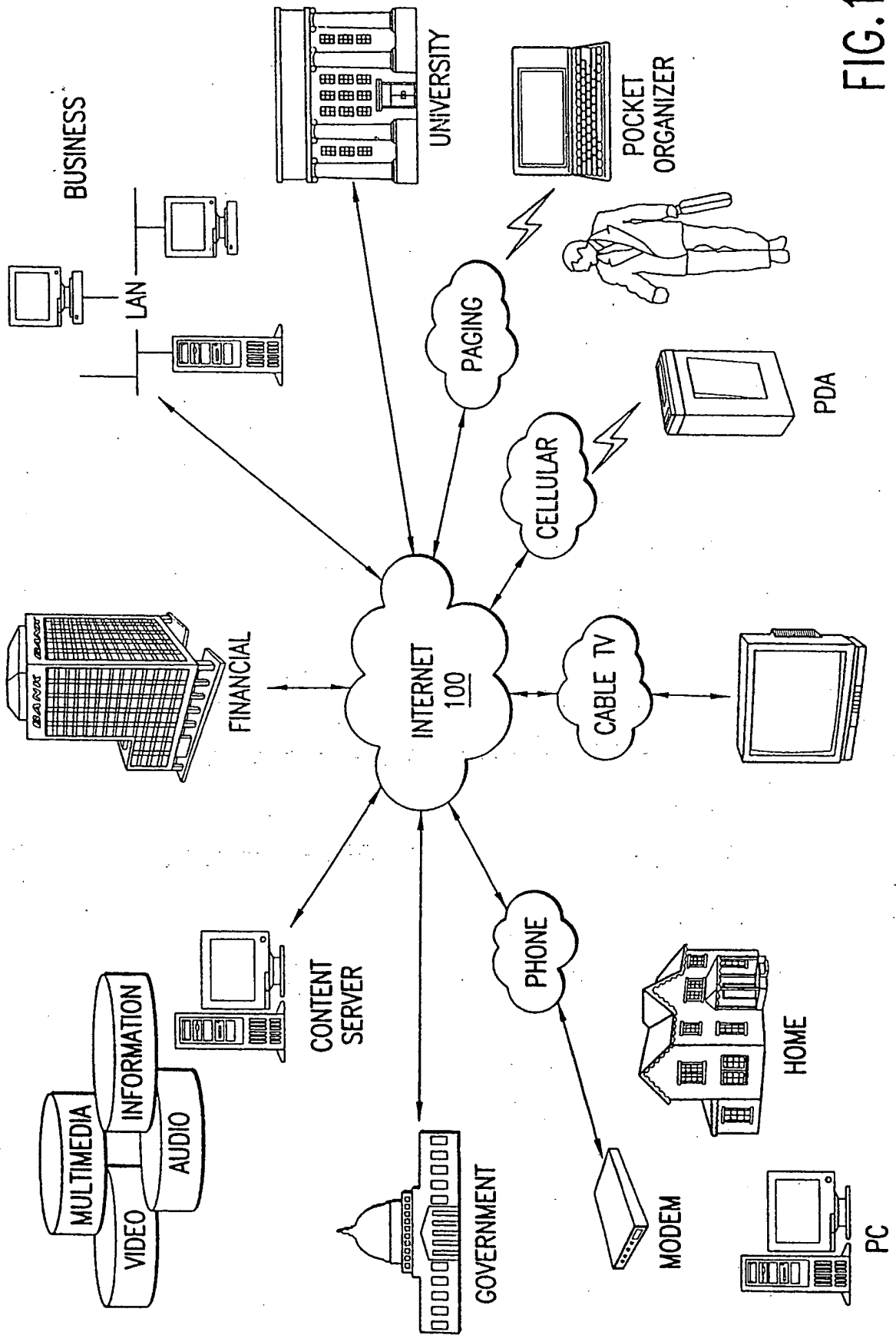
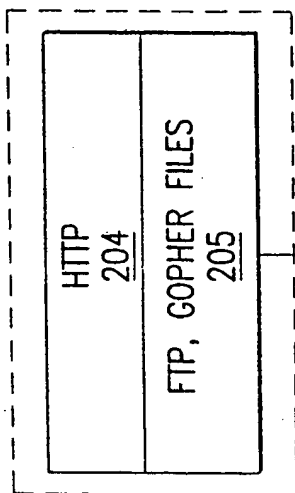


FIG.1

WWW (WEB)  
203



IRC  
(CHAT)  
202

TELNET  
(LOG-IN)  
201

SMTP  
(E-MAIL)  
206

APPLICATION  
200

SSL

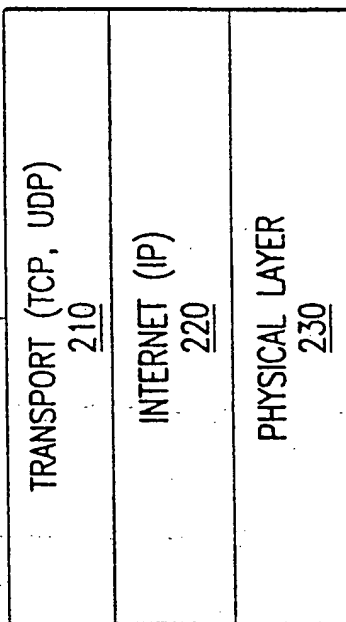


FIG. 2

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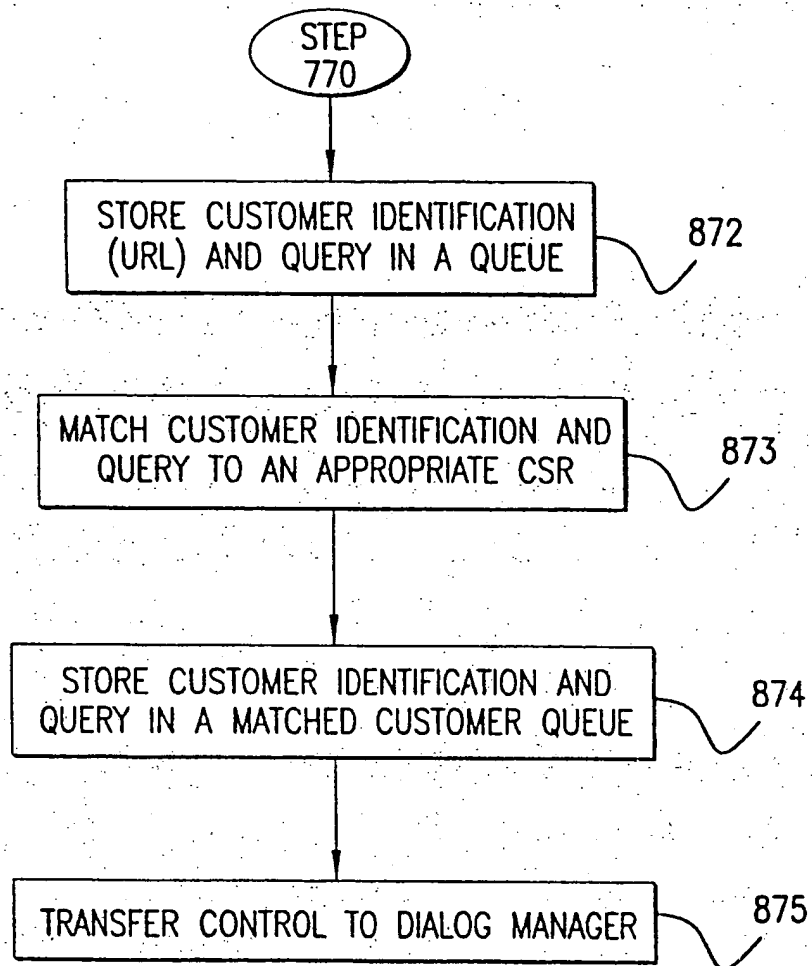


FIG. 8A

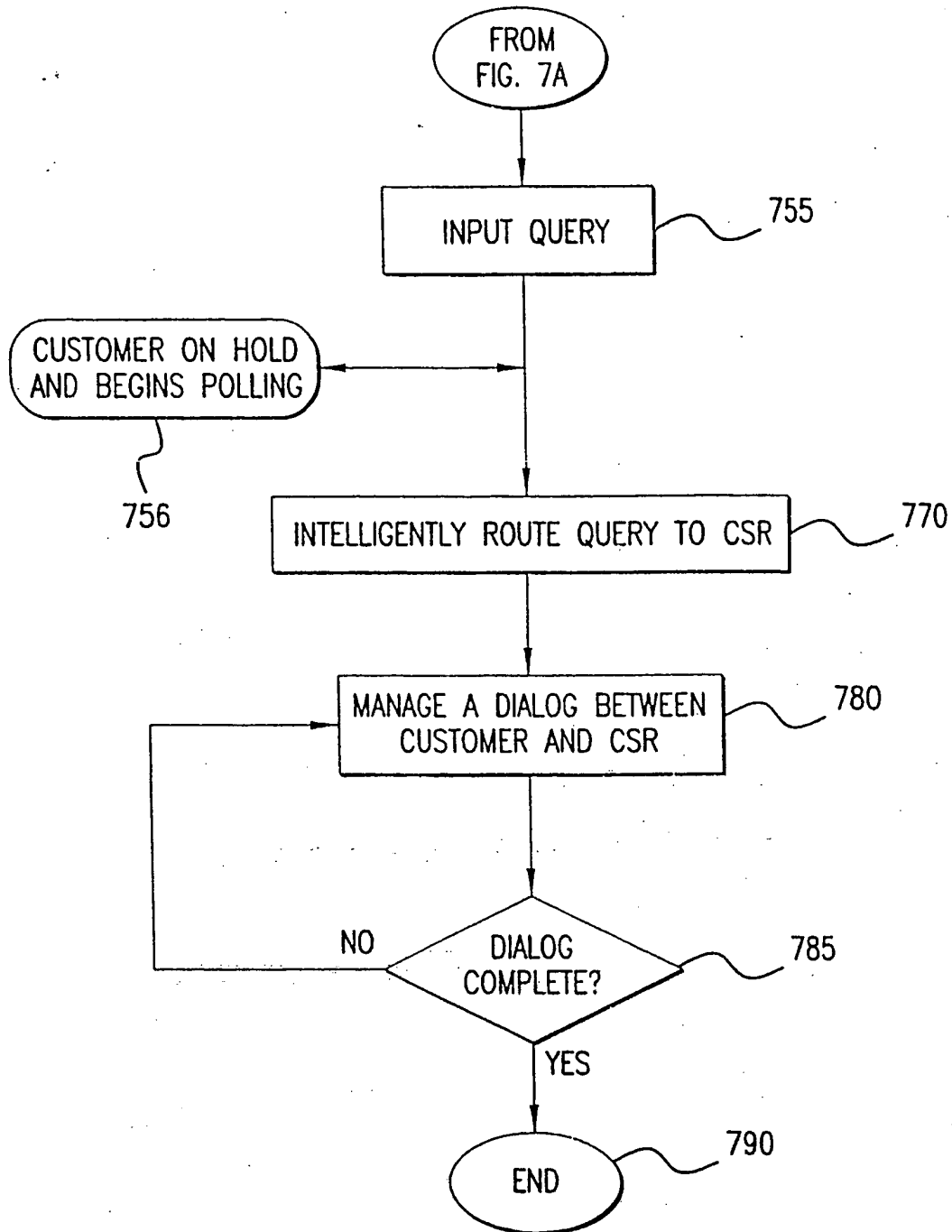


FIG. 7B

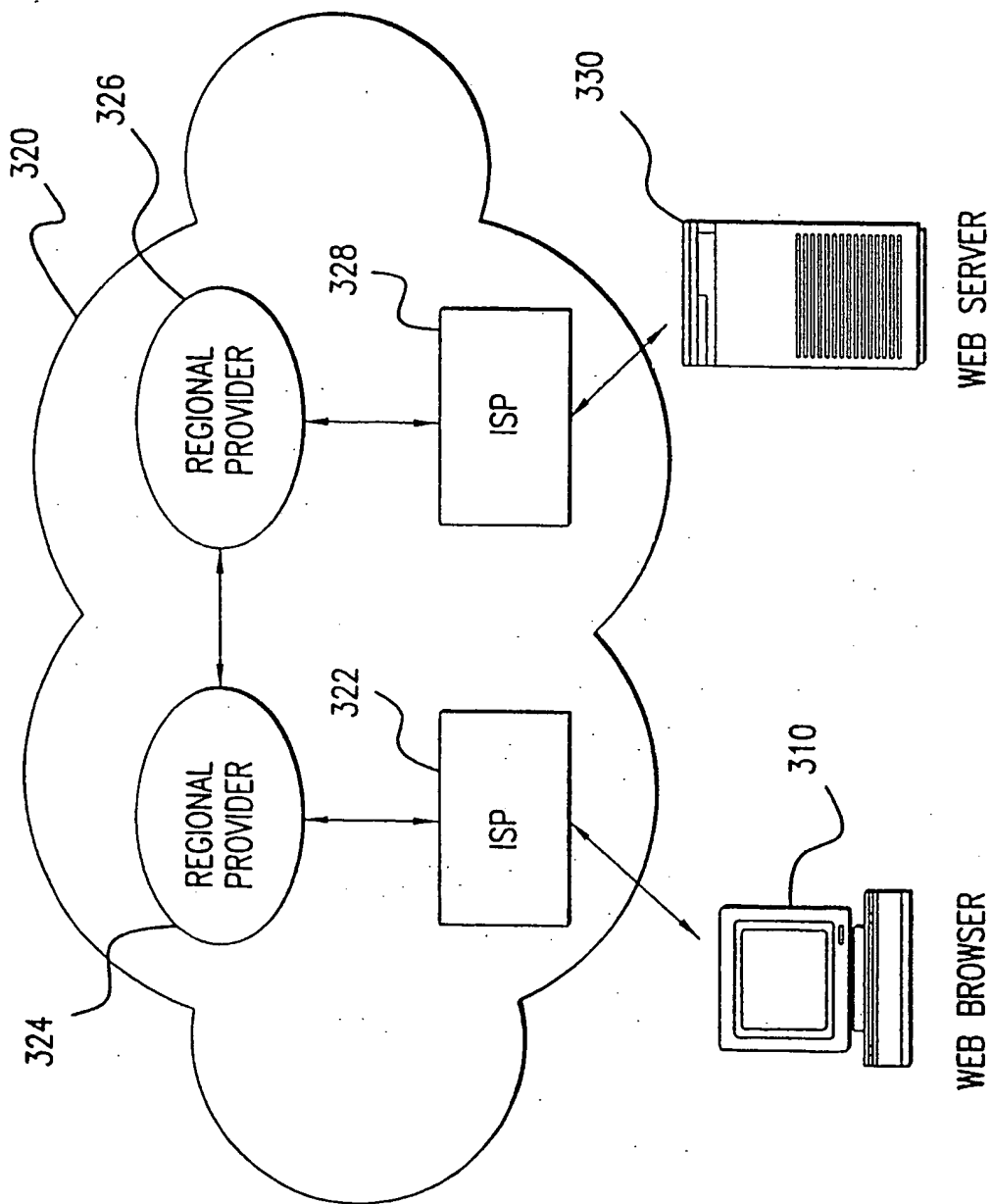


FIG.3

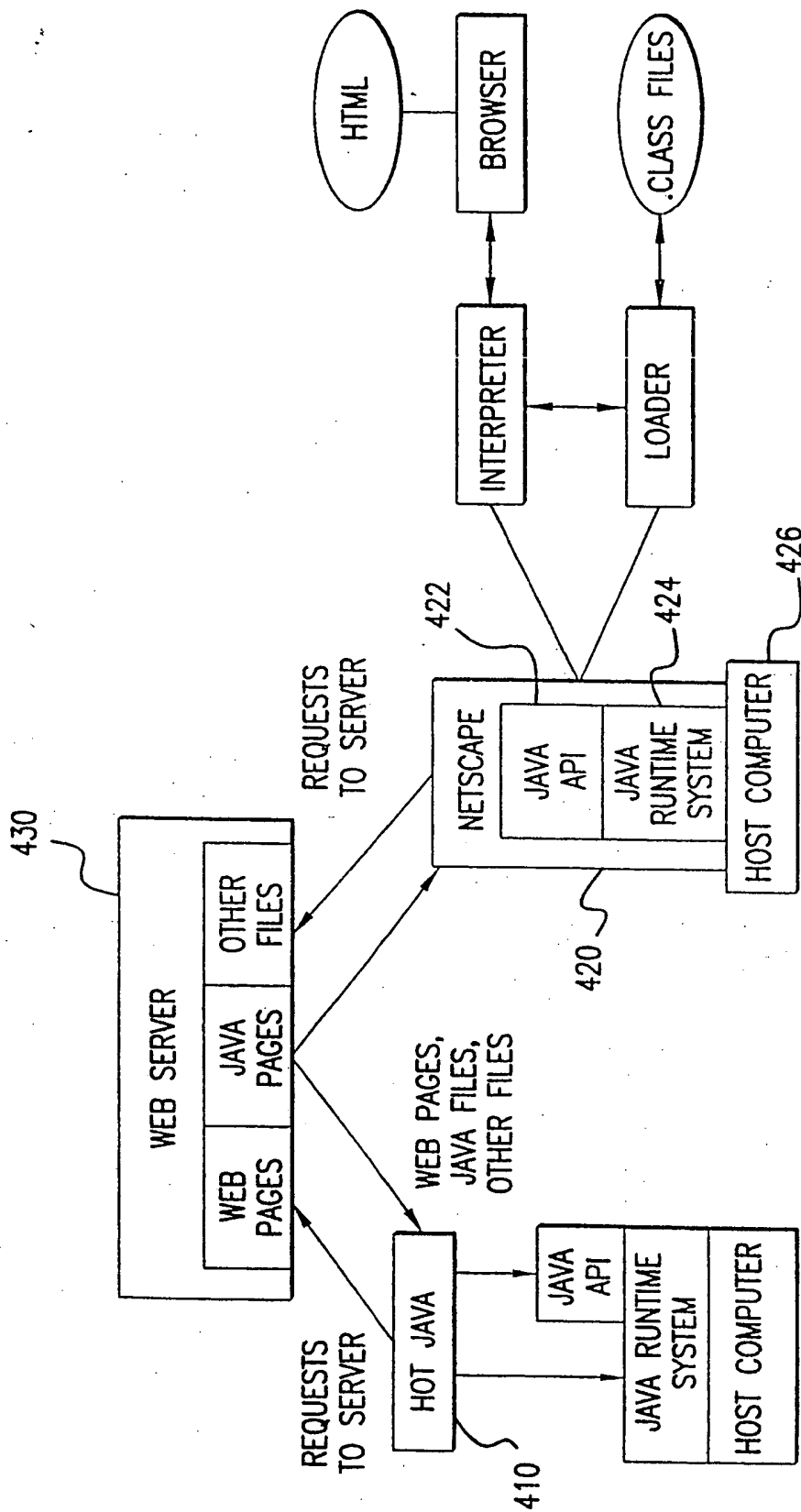


FIG. 4

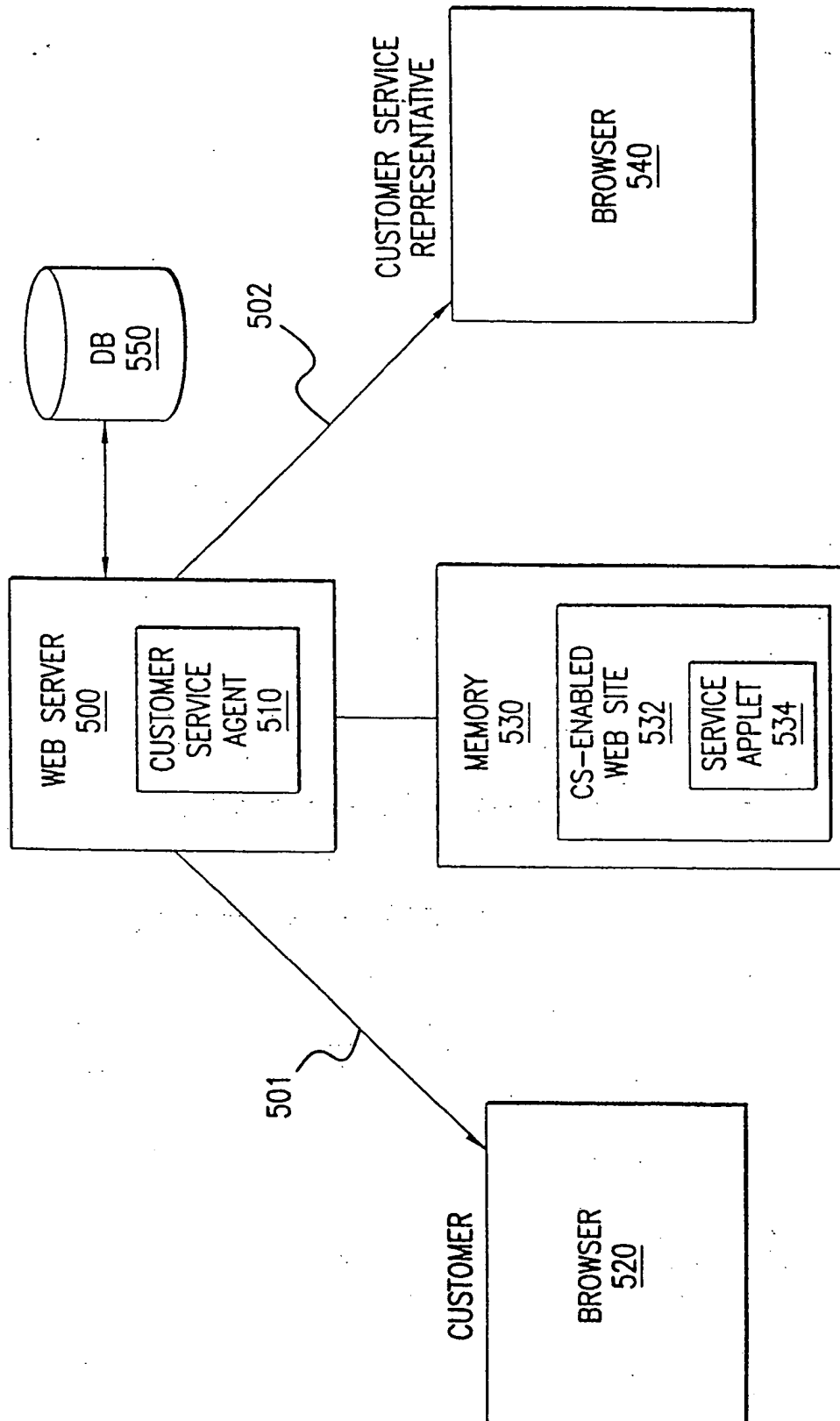


FIG. 5A

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# INTERACT.SERVICE-ARCHITECTURE

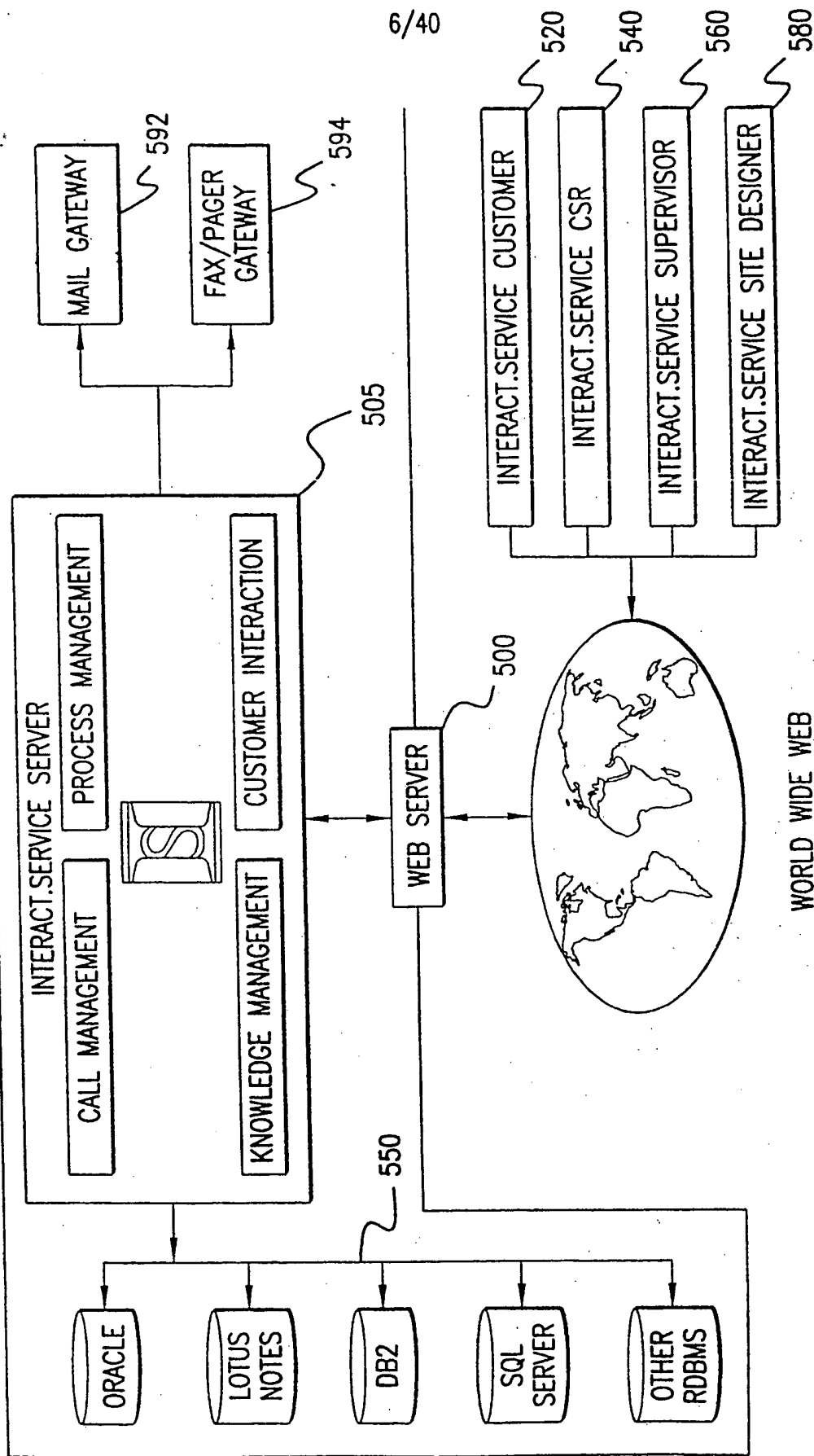


FIG. 5B



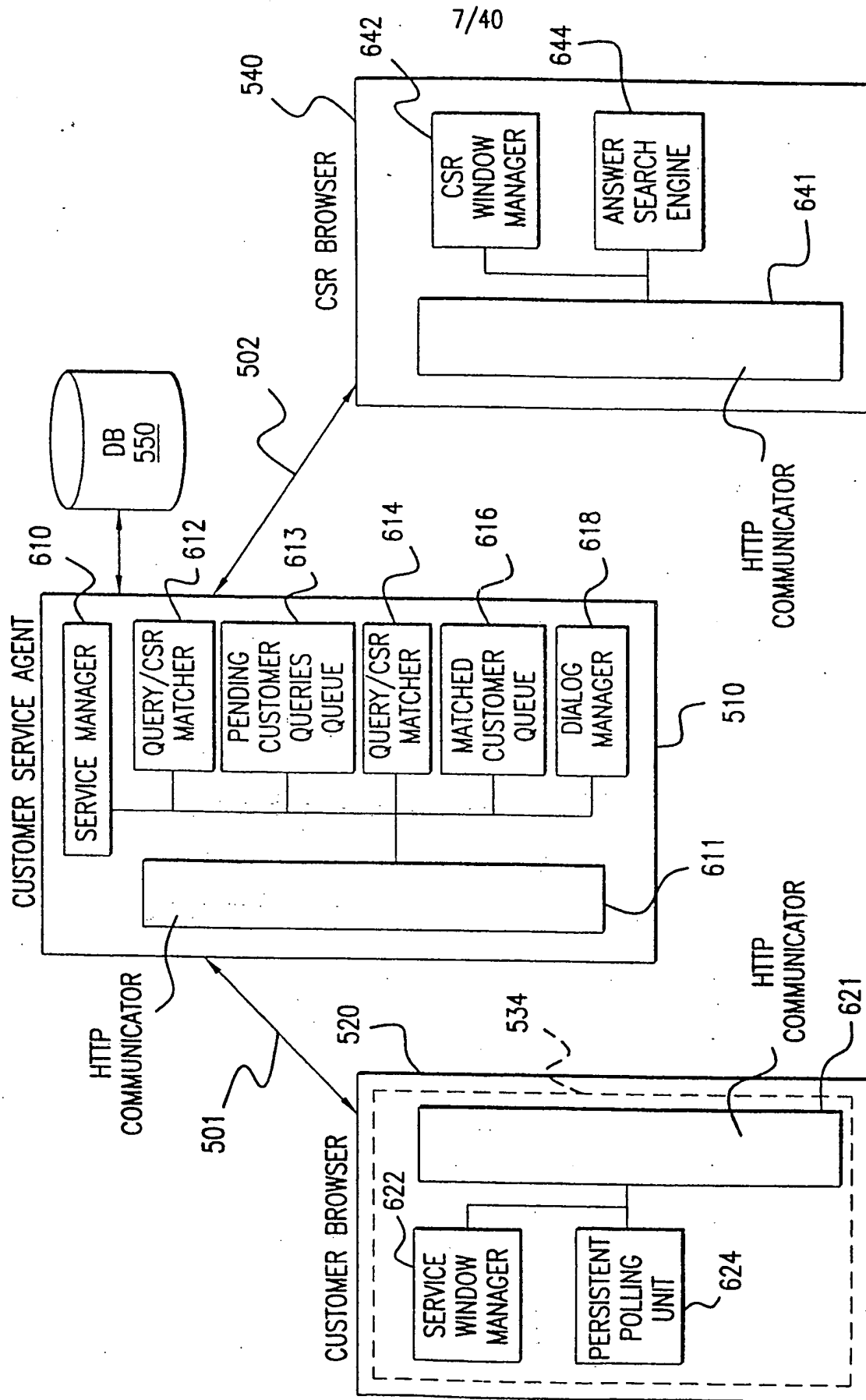


FIG.6

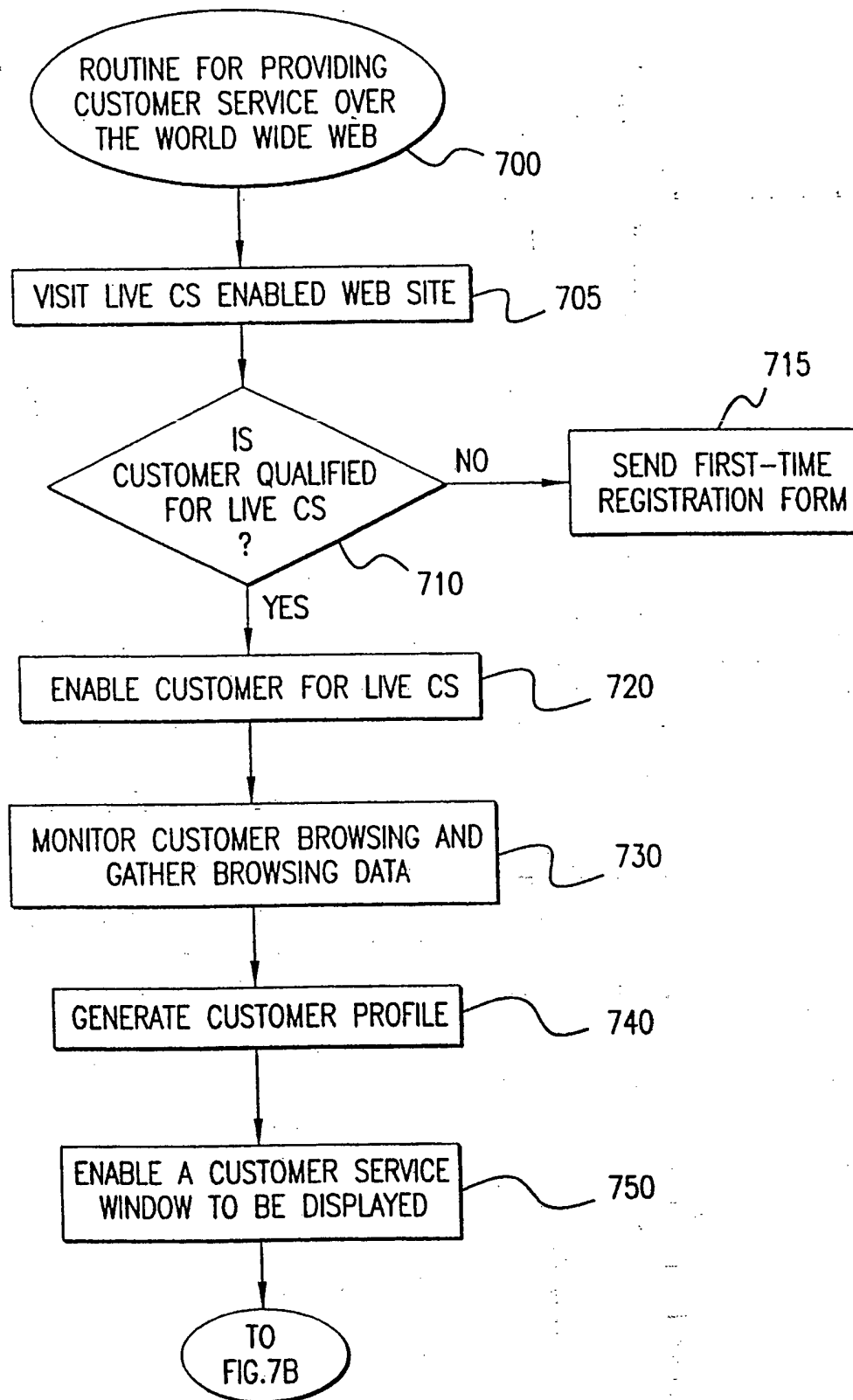


FIG. 7A

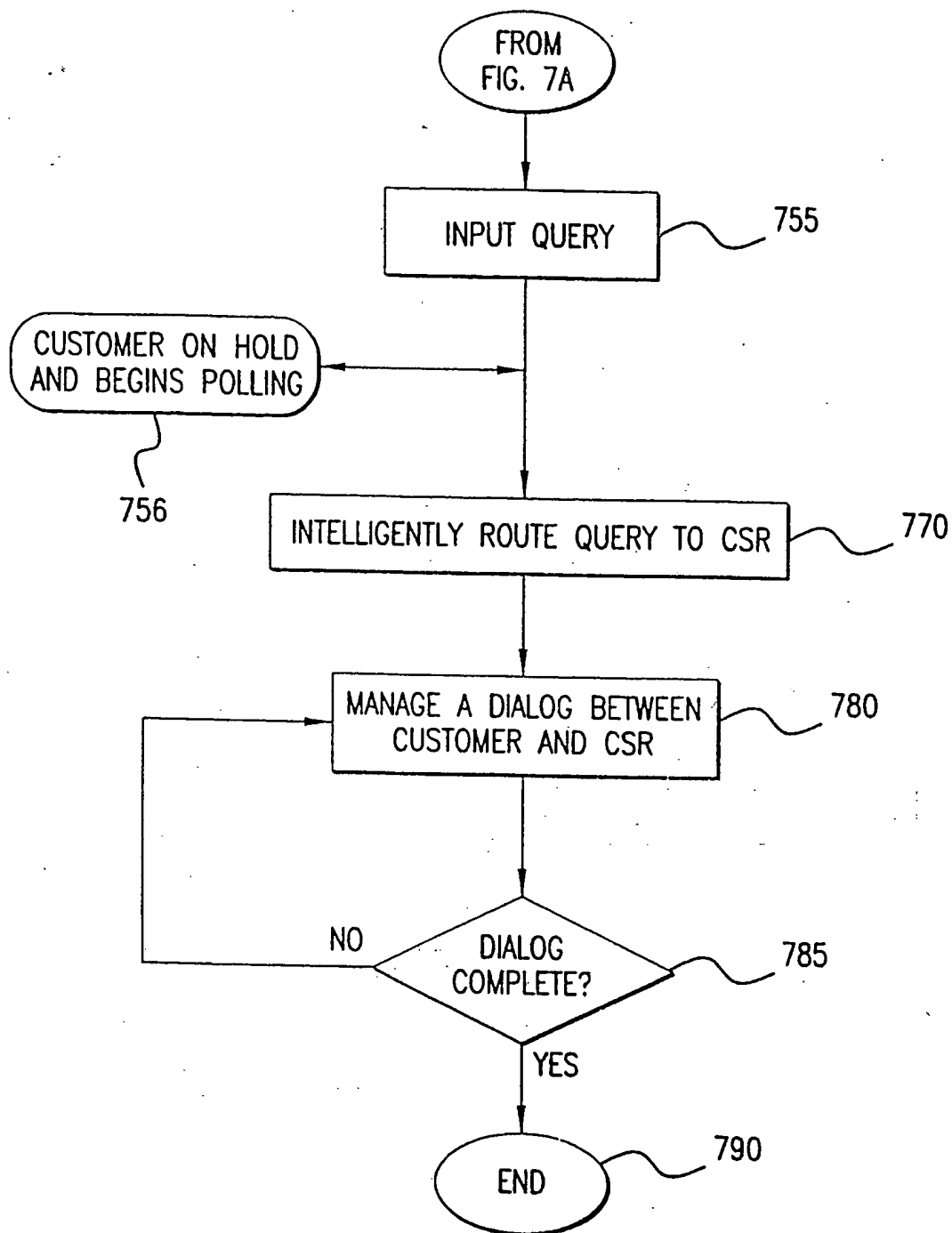


FIG. 7B

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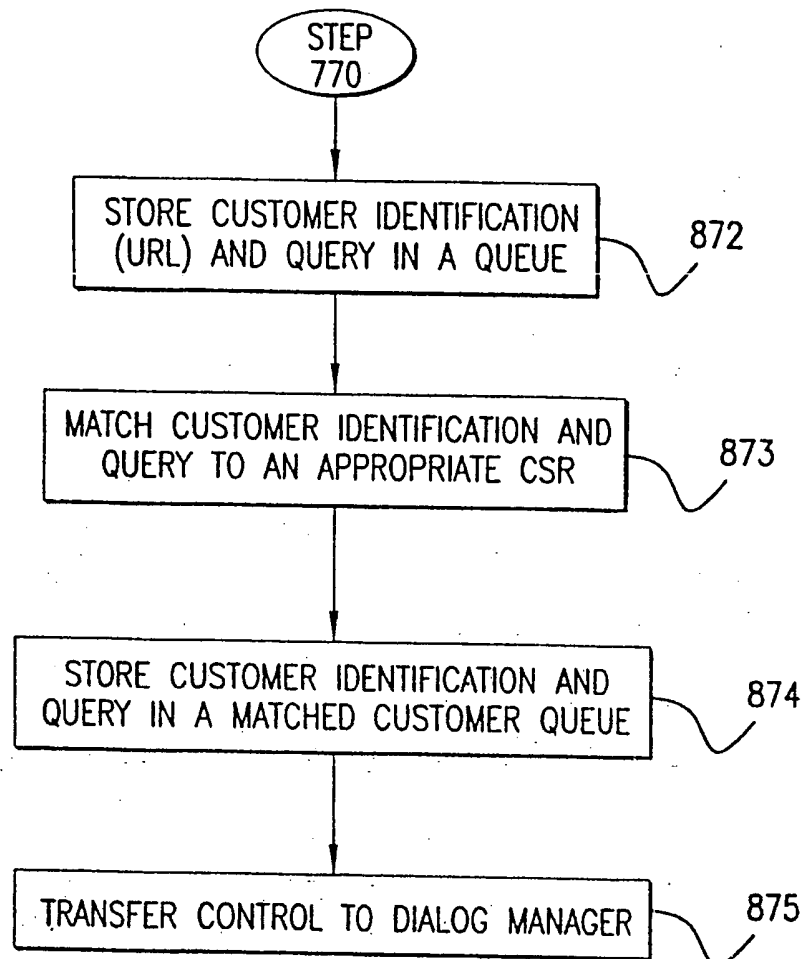


FIG. 8A

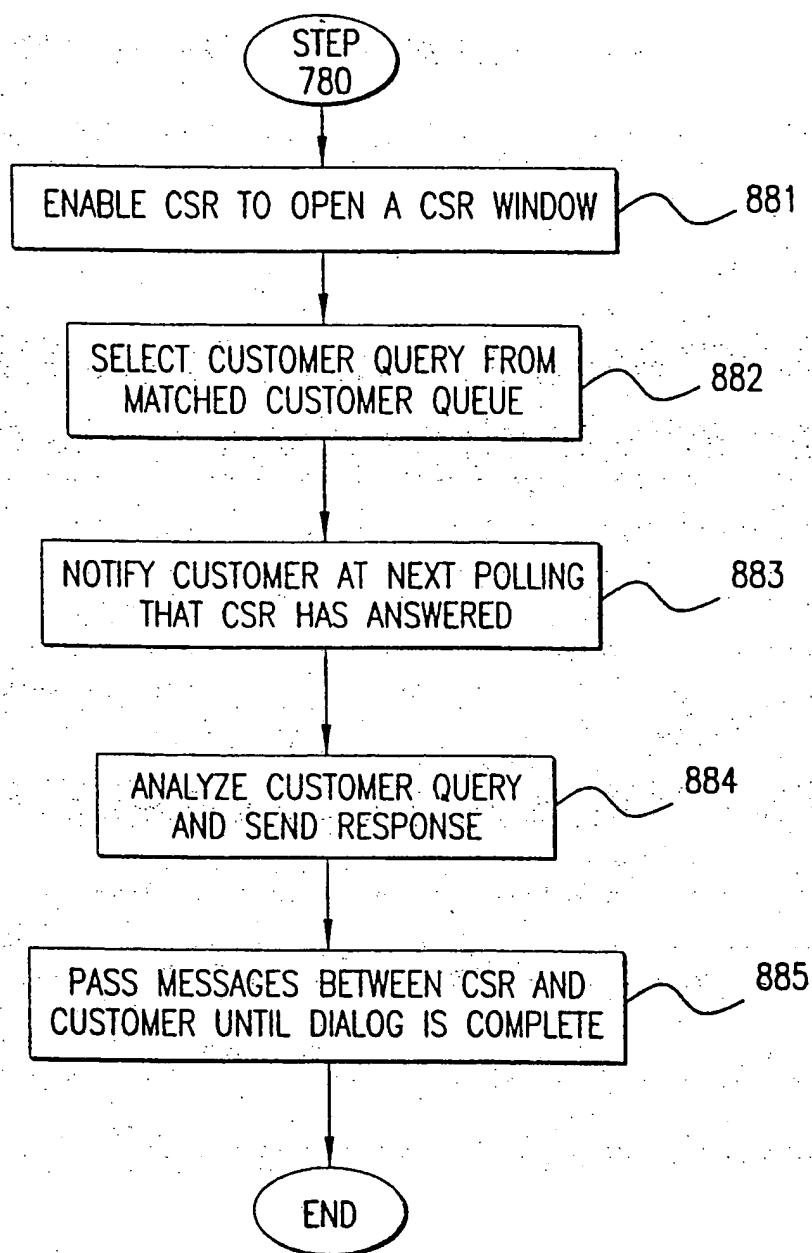


FIG. 8B

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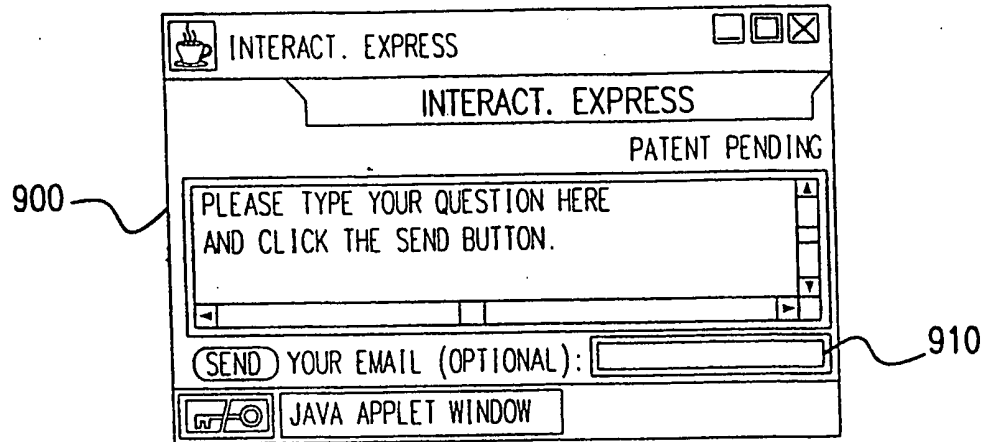


FIG. 9

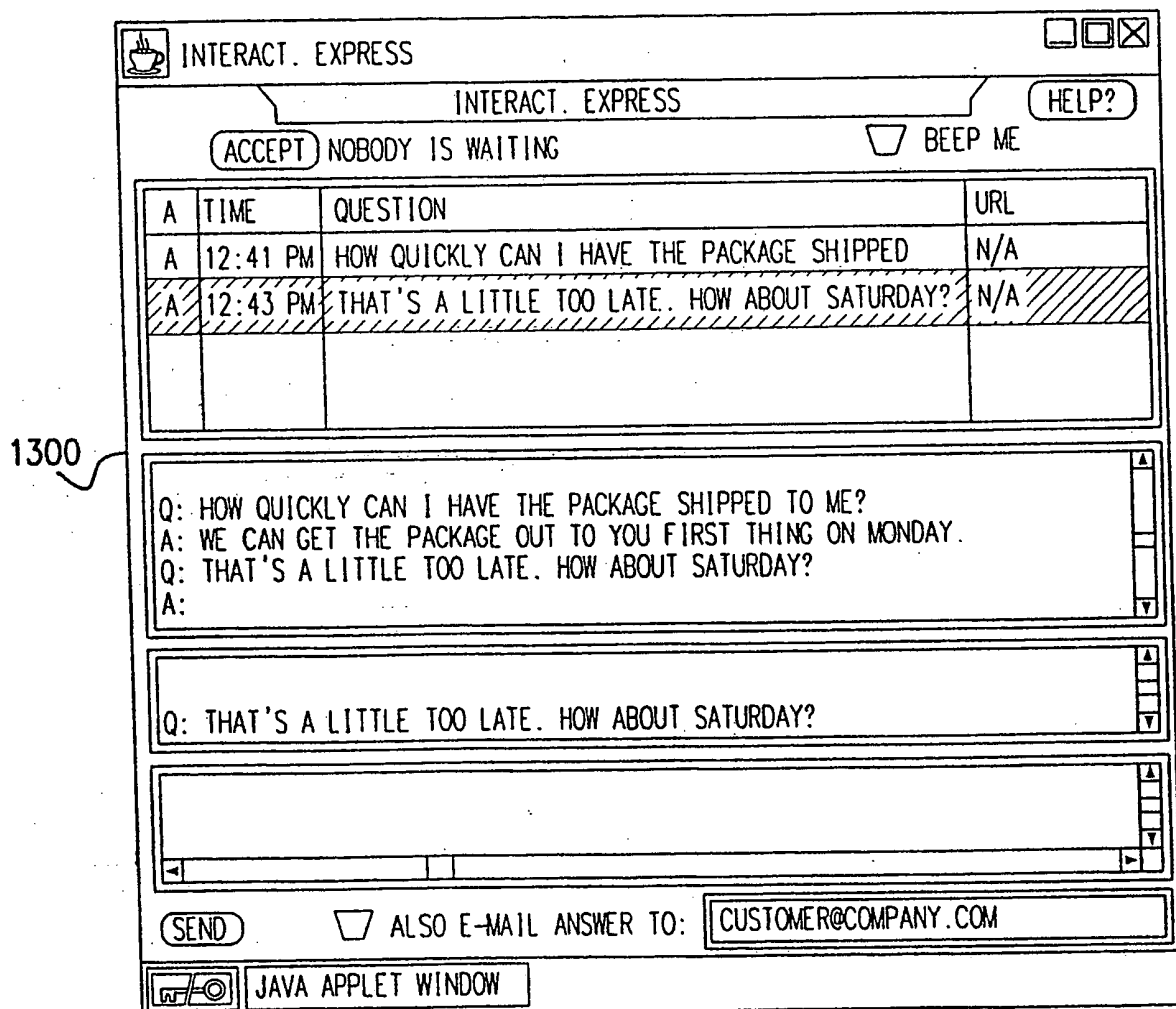



FIG. 13

1000


INTERACT. SERVICE-A SECURE SPACE FOR INSTANT SERVICE-NETSCAPE

FILE EDIT VIEW GO COMMUNICATOR HELP

TRAVEL

ABOUT

WELCOME TO: TRAVEL ONLINE SERVICE COUNTER  
TO SERVE YOU BETTER, PLEASE LET US KNOW ABOUT YOU  
AND HOW WE CAN HELP YOU, FILLING UP THE FORM BELOW.

HELP

SERVICE DETAILS

?

YOUR NAME

COMPANY

PHONE#

EMAIL

WANT TO TALK ABOUT

FLIGHT RESERVATION

BUDGET

BELOW \$1000

NUMBER OF TRAVELERS

CURRENT STATUS WAITING:

SUBJECT

DESCRIPTION

NEXT>>>

FIG. 10

SUBSTITUTE SHEET (RULE 26)

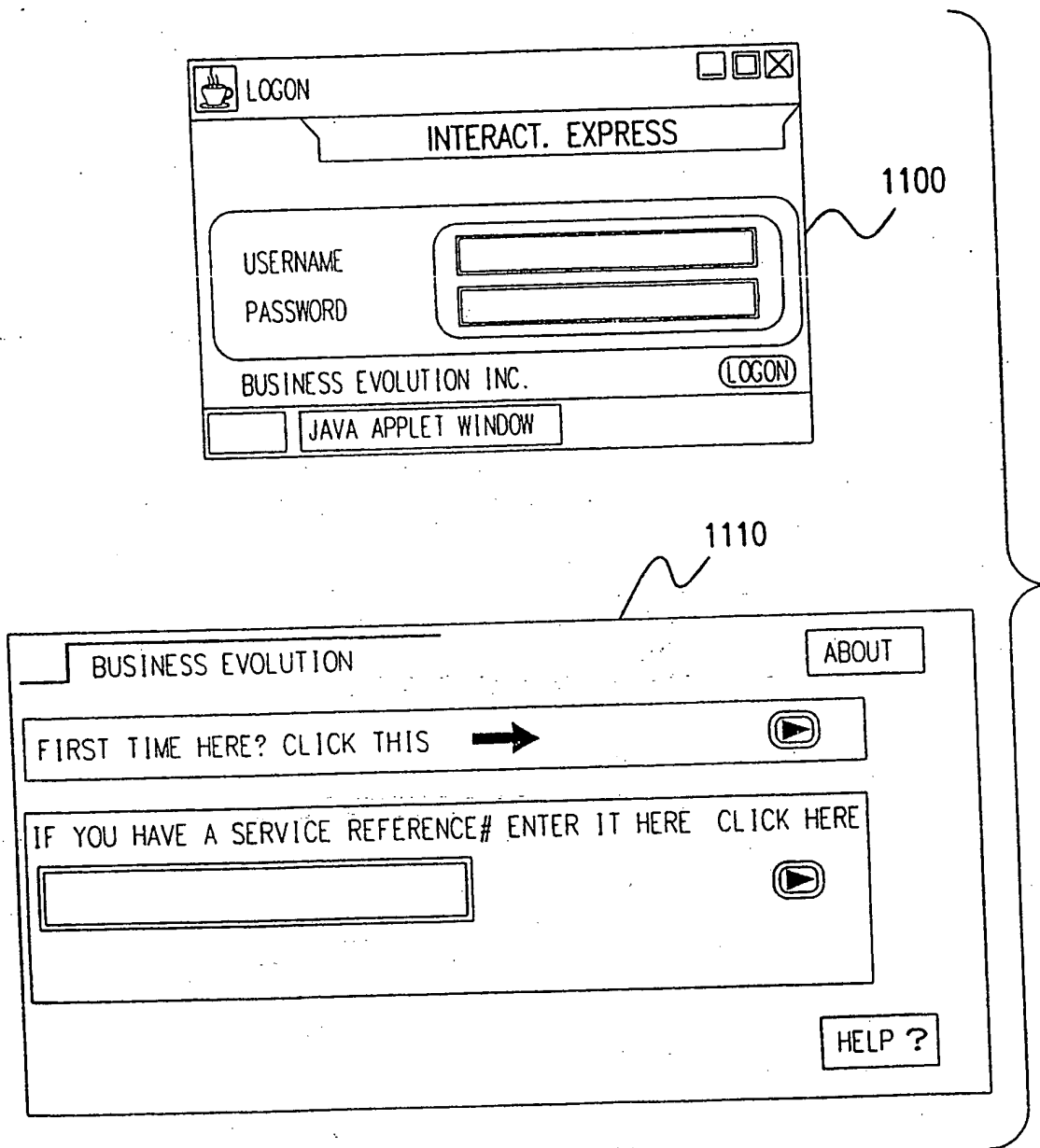


FIG. 11



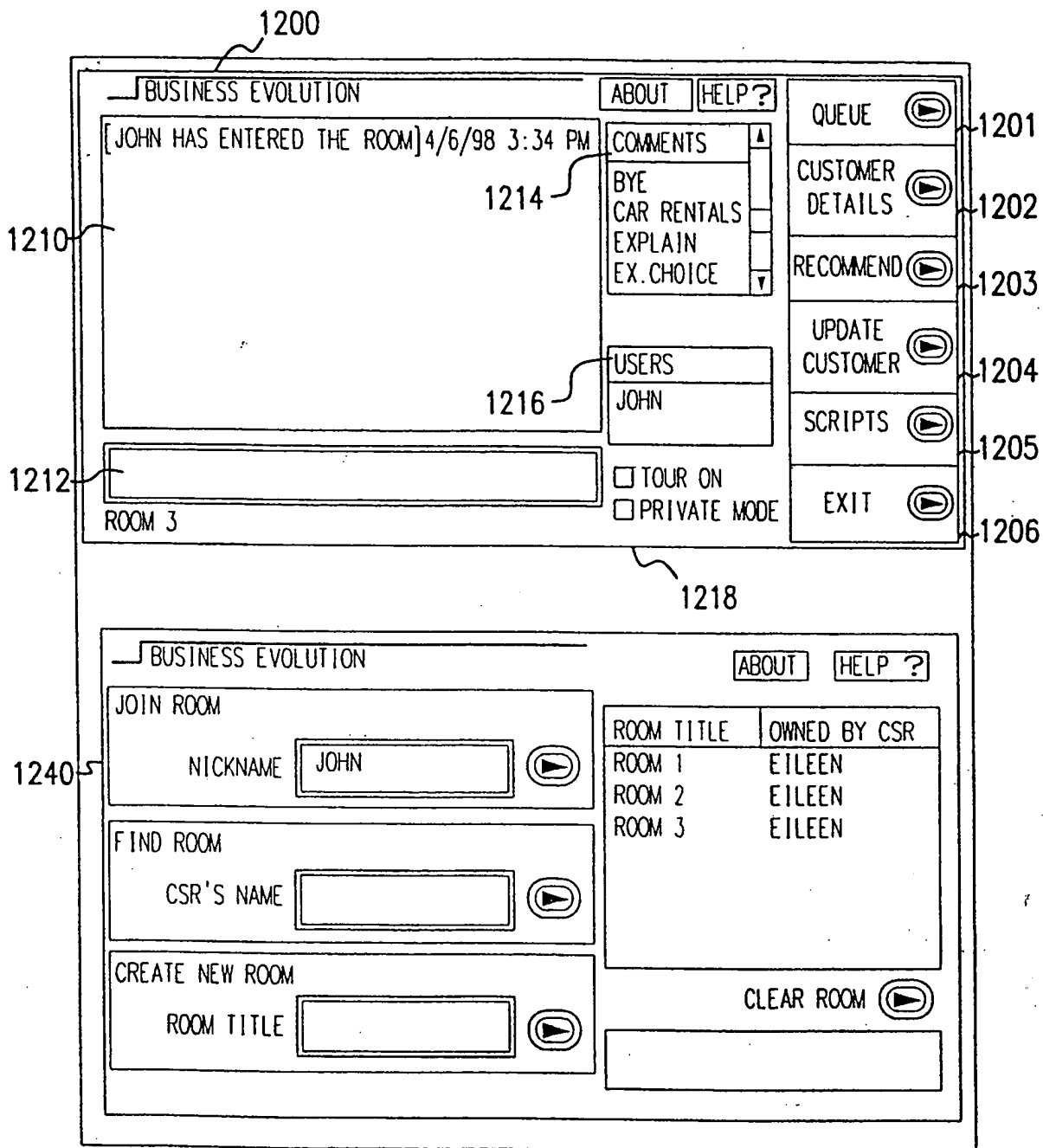


FIG. 12

☐ POSTCARDS
 ☐ TRAVELERS' COMMENTS
 ☐ CRUISE CRITIC
 ☐ VACATIONS HOME

1 VACATION MATCHES YOUR SEARCH. CHOOSE FROM ANY OF THE FOLLOWING VACATIONS OR USE YOUR BROWSER'S "BACK" BUTTON TO REFINER YOUR SEARCH.

ALASKA

PRICE	DURATION	NAME	TYPE OF PACKAGE
FROM \$759 PER PERSON	7 DAYS	GLACIER ROUTE CRUISE	CRUISE

TAKE A CRUISE TO ALASKA ABOARD CARNIVAL'S "FUN SHIP" JUBILEE FOR AN UNFORGETTABLE TRIP OF BEAUTIFUL SCENERY! TAKE YOUR CHOICE OF TWO ITINERARIES - SAIL NORTHBOUND FROM VANCOUVER TO ANCHORAGE OR SOUTHBOUND FROM ANCHORAGE TO VANCOUVER.

TO MAKE YOU RESERVATION TODAY,  
CALL 1-800-815-0232

OR CLICK HERE FOR AN ONLINE SERVICE REP.

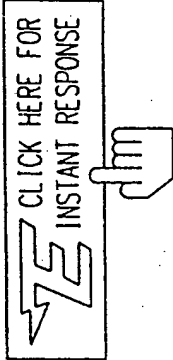


FIG. 14A

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☐ POSTCARDS
 ☐ TRAVELERS' COMMENTS
 ☐ CRUISE CRITIC
 ☐ VACATIONS HOME

1 VACATION MATCHES YOUR SEARCH. CHOOSE FROM ANY OF THE FOLLOWING VACATIONS OR USE YOUR BROWSER'S "BACK" BUTTON TO REFINER YOUR SEARCH.

INTERACT EXPRESS

ENTER YOUR QUESTION BELOW:

I GET SEASICK. WHICH CABIN IS BEST FOR ME?

JAVA APPLET WINDOW

PRICE
 FROM \$75
 PER PERS
 TAKE A CRUISE
 SCENERY! TAKE
 SOUTHBOUND FRO

KAGE
 PATENT PENDING
 OF BEAUTIFUL
 RAGE OR

 CALL 1-800-815-0232
 OR CLICK HERE FOR AN ONLINE SERVICE REP.
 


CLICK HERE FOR  
INSTANT RESPONSE

FIG. 14B

**FIG. 14C**

☐ POSTCARDS    ☐ TRAVELERS' COMMENTS    ☐ CRUISE CRITIC    ☐ VACATIONS HOME

1 VACATION MATCHES YOUR SEARCH. CHOOSE FROM ANY OF THE FOLLOWING VACATIONS OR USE YOUR BROWSER'S "BACK" BUTTON TO REFINER YOUR SEARCH.

PRICE	INTERACT EXPRESS	PATENT PENDING
FROM \$75 PER PERSON	 A: WELCOME TO OUR CRUISE BOOKING SERVICE! CABINS NEAR THE WATERLINE OFFER THE CALMEST RIDES. Q: GREAT! I'M ALMOST READY TO BOOK, BUT NEED MORE INFO ON GROUP RATES IN JUNE. A: I AM GOING TO TRANSFER YOU TO OUR FULL-SERVICE CENTER FOR THAT. PLEASE CLICK ON THE LINE HERE: HTTP:// ADDRESS	KAGE
TAKE A CRUISE SCENERY! TAKE SOUTHBOUND FROM	<input type="text"/> <input type="button" value="(SEND)"/> YOUR E-MAIL (OPTIONAL): <input type="text"/> ENTER YOUR E-MAIL-ADDRESS HERE	
	<input type="button" value="JAVA APPLET WINDOW"/>	



 CLICK HERE FOR INSTANT RESPONSE

FIG. 14D

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ABOUT

FIRST TIME HERE? CLICK THIS

NEW SERVICE

IF YOU HAVE A SERVICE PREFERENCE # ENTER IT HERE

CLICK HERE

HELP ?

BUSINESS

ONLINE CUSTOMER SERVICE

FIG. 14E

WELCOME TO CRUISE BOOKING SERVICE.

PLEASE TELL US HOW WE CAN HELP YOU IN FORM BELOW:

PLEASE LOOK ABOVE FOR INSTRUCTIONS

SERVICE DETAILS

?

YOUR NAME

COMPANY

PHONE #  EMAIL

REGION  MONTH OF TRAVEL

DOCUMENT DONE

FIG. 14F

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WELCOME TO

CRUISE BOOKING SERVICE.

PLEASE TELL US HOW WE CAN HELP YOU IN FORM BELOW:

REGION
ALASKA

MONTH OF TRAVEL
JUNE

LENGTH OF CRUISE (DAYS)
7

CURRENT STATUS WAITING

SUBJECT
GROUP RATES

DESCRIPTION
DOES THE \$759 PER PERSON RATE APPLY FOR GROUPS UNDER FIVE FOR ALASKAN CRUISES?

NEXT>>>

DOCUMENT DONE

FIG. 14G



VICE-A SECURE SPACE FOR INSTANT SERVICE-NETSCAPE		
GO COMMUNICATOR HELP		
/↑/		
[JAMES HAS EXITED THE ROOM] 4/15/98 6:52 PM [JAMES HAS ENTERED THE ROOM] 4/15/98 7:01 PM	ABOUT	HELP ?
	COMMENTS ANYTHING ELSE? BON VOYAGE BYE HELLO	
	USERS JAMES	QUEUE DETAILS SUGGEST UPDATE SCRIPTS EXIT
	<input type="checkbox"/> TOUR ON <input type="checkbox"/> PRIVATE MODE	
ONLINE CUSTOMER SERVICE		

FIG. 14H

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[JAMES HAS EXITED THE ROOM] 4/15/98 6:52 PM  
[JAMES HAS ENTERED THE ROOM] 4/15/98 7:01 PM

ABOUT HELP?

COMMENTS  
ANYTHING ELSE?  
BON VOYAGE  
BYE  
HELLO

USERS  
JAMES

Q  
DE  
SU  
UP  
SC  
E

 QUEUES   

WAITING ESCALATED ALERT

REGION	MONTH OF TRAVEL	TIME	
ALSK	JUNE	55	▲
CRBBN	NOVEMBER	1588	
HW	FEBRUARY	63	
HW	OCTOBER	451	

☐ TOUR ON  
☐ PRIVATE MODE

HELP CUSTOMER DETAILS ☒ BEEP FOR NEW CUSTOMERS


 JAVA APPLET WINDOW

FIG. 141

[JAMES HAS EXITED THE ROOM] 4/15/98 6:52 PM  
[JAMES HAS ENTERED THE ROOM] 4/15/98 7:01 PM

ABOUT HELP ?

COMMENTS  
ANYTHING ELSE?  
BON VOYAGE  
BYE  
HELLO

USERS  
JAMES

Q  
DE  
SU  
UP  
SC  
E

QUEUES

WAITING ESCALATED ALERT

REGION	MONTH OF TRAVEL	TIME
ALSK	JUNE	55
CRBBN		1588
HW		63
HW		451

CUSTOMER: JANET M HARRIS.  
PROBLEM:  
GROUP RATES

☐ TOUR ON  
☐ PRIVATE MODE

HELP CUSTOMER DETAILS ☒ BEEP FOR NEW CUSTOMERS

JAVA APPLET WINDOW

FIG. 14J

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<p>PLEASE WAIT UNTIL YOU SEE THE CUSTOMER NAME IN THE USERS LIST. IF THE CUSTOMER NAME DOES NOT APPEAR IN A REASONABLE TIME, PLEASE PLACE THE CUSTOMER IN HOLD STATUS.</p> <p>[JANET M HARRIS HAS ENTERED THE ROOM] 4/15/98 8:19 PM</p>		<p>ABOUT</p> <p>COMMENTS</p> <p>ANYTHING ELSE?</p> <p>BON VOYAGE</p> <p>BYE</p> <p>HELLO</p> <p>USERS</p> <p>JAMES</p> <p>JANET M HARRIS</p>	<p>HELP ?</p> <p>QUEUE</p> <p>DETAILS</p> <p>SUGGEST</p> <p>UPDATE</p> <p>SCRIPTS</p> <p>EXIT</p>
<input type="text"/>		<p><input type="checkbox"/> TOUR ON</p> <p><input type="checkbox"/> PRIVATE MODE</p>	
<p>MER TAILS</p> <p>DETAILS AILS RY</p>	<p>?</p> <p>COMPANY</p> <p>PHONE #212-677-0498</p> <p>REGION ALASKA</p> <p>LENGTH OF 7 CRUISE (DAYS)</p> <p>SUBJECT GROUP RATES</p> <p>DESCRIPTION DOES THE \$759 PER PERSON RATE APPLY</p> <p>GROUPS UNDER FIVE FOR ALASKAN CRUISES</p>	<p>NAME</p> <p>EMAIL jhorris@aol.com</p> <p>MOTH OF JUNE TRAVEL</p> <p>CURRENT STATUS ACCEPTED</p>	

FIG. 14K

* INTERACT.SERVICE-A SECURE SPACE FOR INSTANT SERVICE - NETSCAPE			
FILE EDIT VIEW GO COMMUNICATOR HELP			
<p>PLEASE WAIT UNTIL YOU SEE THE CUSTOMER NAME IN THE USERS LIST. IF THE CUSTOMER NAME DOES NOT APPEAR IN A REASONABLE TIME, PLEASE PLACE THE CUSTOMER IN HOLD STATUS.</p> <p>[JANET M HARRIS HAS ENTERED THE ROOM] 4/15/98 8:19 PM</p>		<p>ABOUT HELP ?</p> <p>COMMENTS</p> <p>ANYTHING ELSE?</p> <p>BON VOYAGE</p> <p>BYE</p> <p>HELLO</p> <p>USERS</p> <p>JAMES</p> <p>JANET M HARRIS</p>	<p>QUEUE</p> <p>DETAILS</p> <p>SUGGEST</p> <p>UPDATE</p> <p>SCRIPTS</p> <p>EXIT</p>
<p>YES JANET, THAT RATE APPLIES, BUT WE'RE ALMOST BOOKED FOR ALL JUNE RUNS</p>		<p><input type="checkbox"/> TOUR ON</p> <p><input type="checkbox"/> PRIVATE MODE</p>	
<p>CUSTOMER DETAILS</p> <p>CASE NUMBER 94922568</p> <p>CUSTOMER DETAILS</p> <p>SERVICE DETAILS</p> <p>STATUS HISTORY</p>	<p>?</p> <p>COMPANY</p> <p>PHONE #212-677-0498</p> <p>REGION ALASKA</p> <p>LENGTH OF 7</p> <p>CRUISE (DAYS)</p>	<p>NAME</p> <p>EMAIL</p> <p>MONTH OF TRAVEL</p>	

FIG. 14L

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 INTERACT.SERVICE-A SECURE SPACE FOR INSTANT SERVICE - NETSCAPE		
FILE EDIT VIEW GO COMMUNICATOR HELP		
<p>PLEASE WAIT UNTIL YOU SEE THE CUSTOMER NAME IN THE USERS LIST. IF THE CUSTOMER NAME DOES NOT APPEAR IN A REASONABLE TIME, PLEASE PLACE THE CUSTOMER IN HOLD STATUS.</p> <p>[JANET M HARRIS HAS ENTERED THE ROOM] 4/15/98 8:19 PM</p> <p>JAMES: YES JANET, THAT RATE APPLIES, BUT WE'RE ALMOST BOOKED FOR ALL JUNE RUNS</p> <p>JANET M HARRIS: OH, THEN PLEASE BOOK THE ALASKAN ONE FOR ME! I'D LIKE THE FIRST WEEK OF JUNE AND IT'S A GROUP OF FOUR</p> <p>JAMES: OF COURSE, WHAT CREDIT CARD WILL YOU BE USING?</p>		<p>ABOUT HELP ?</p> <p>COMMENTS</p> <p>ANYTHING ELSE?</p> <p>BON VOYAGE</p> <p>BYE</p> <p>HELLO</p> <p>USERS</p> <p>JAMES</p> <p>JANET M HARRIS</p>
<input type="text"/>		<input type="checkbox"/> TOUR ON <input type="checkbox"/> PRIVATE MODE
<p>CUSTOMER DETAILS</p> <p>CASE NUMBER 94922568</p> <p><u>CUSTOMER DETAILS</u>  <u>SERVICE DETAILS</u>  <u>STATUS HISTORY</u></p>	<p>?</p> <p>COMPANY</p> <p>PHONE #212-677-0498</p> <p>REGION ALASKA</p> <p>LENGTH OF 7 CRUISE (DAYS)</p>	<p>NAME</p> <p>EMAIL</p> <p>MONTH OF TRAVEL</p>

FIG. 14M



PLEASE WAIT UNTIL YOU SEE THE CUSTOMER NAME IN THE USERS LIST. IF THE CUSTOMER NAME DOES NOT APPEAR IN A REASONABLE TIME, PLEASE PLACE THE CUSTOMER IN HOLD STATUS.		ABOUT	HELP?	QUEUE
		COMMENTS		DETAILS
		ANYTHING ELSE?		SUGGEST
		BON VOYAGE		UPDATE
		BYE		SCRIPTS
				EXIT
 SCRIPTS		HARRIS OUR ON PRIVATE MODE		
KNOWLEDGE BASE		NAME  EMAIL jharris@aol. NTH OF JUNE TRAVEL		
1: OUR FEATURED CRUISE IS: 2: HERE ARE THE TOP TEN ROMANTIC CRUISES YOU MAY BE INTERESTED IN: 3: THE TOP TEN ALASKA CRUISES ARE: 4: HERE ARE OUR RECOMMENDATIONS FOR SINGLES: 5: THE BEST EUROPEAN CRUISE EXPERIENCES ARE: 6: NO TIE! NO TUX! WE HAVE COLLECTION OF ALTERNATIVE CRUISES JUST FOR YOU: 7: HERE IS SOME INFORMATION FOR FIRST TIME CRUISERS. YOU MAY WANT TO BOOKMARK FO... 8: YOU WANT TO COMPARE THE CRUISE LINES YOURSELVES? USE THE UNBIASED REVIEWS... 9: HERE ARE SOME TIPS THAT MAY BE HELPFUL TO YOU:		HELP		
7: HERE IS SOME INFORMATION FOR FIRST TIME CRUISERS. YOU MAY WANT TO BOOKMARK FOR FUTURE REFERENCE.		▲ ▼		
URL: <a href="http://www.address/vacations/html/cruise critic/g">HTTP://WWW.ADDRESS/VACATIONS/HTML/CRUISECRITIC/G</a>		SHOW		
 JAVA APPLET WINDOW				

FIG. 14N

INTERACT.SERVICE-A SECURE SPACE FOR INSTANT SERVICE - NETSCAPE

FILE EDIT VIEW GO COMMUNICATOR HELP

HOLD STATUS.

[JANET M HARRIS HAS ENTERED THE ROOM] 4/15/98 8:19 PM

JAMES: YES JANET, THAT RATE APPLIES, BUT WE'RE ALMOST BOOKED FOR ALL JUNE RUNS.

JANET M HARRIS: OH, THEN PLEASE BOOK THE ALASKAN ONE FOR ME! I'D LIKE THE FIRST WEEK OF JUNE AND IT'S A GROUP OF FOUR.

JAMES: OF COURSE, WHAT CREDIT CARD WILL YOU BE USING?

JAMES: HERE IS SOME INFORMATION FOR FIRST TIME CRUISERS. YOU MAY WANT TO BOOKMARK FOR YOU FUTURE REFERENCE.

ABOUT HELP?

COMMENTS

ANYTHING ELSE?

BON VOYAGE

BYE

HELLO

USERS

JAMES

JANET M HARRIS

☒ TOUR ON

☐ PRIVATE MODE

POSTCARDS TRAVELERS COMMENTS CRUISE CRITIC VACATIONS HOME

FIRST TIME CRUISER'S GUIDE

- IS CRUISING FOR ME?
- SOME MISCONCEPTIONS ABOUT CRUISING
- HOW MUCH DOES IT COST?

FIG. 140



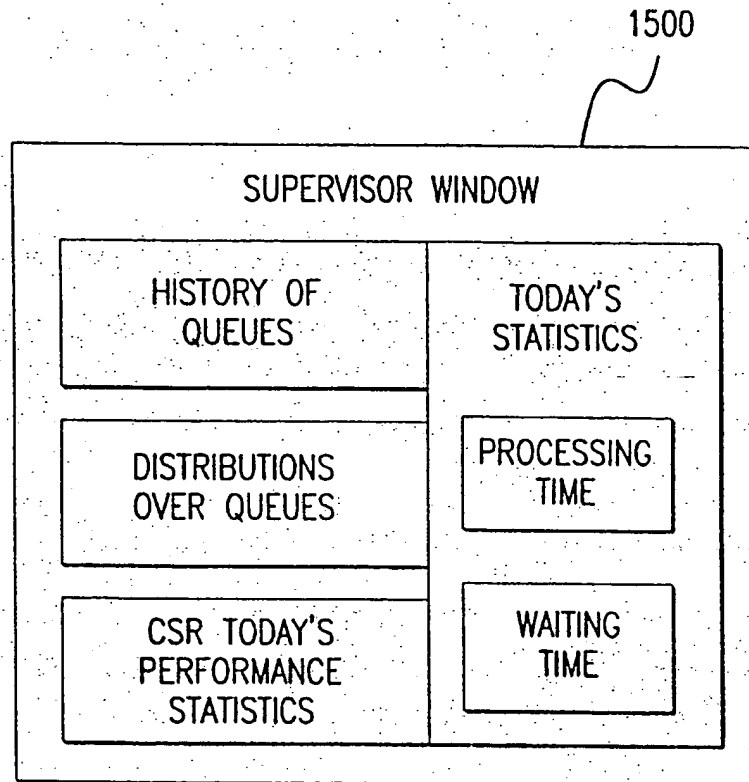


FIG. 15A

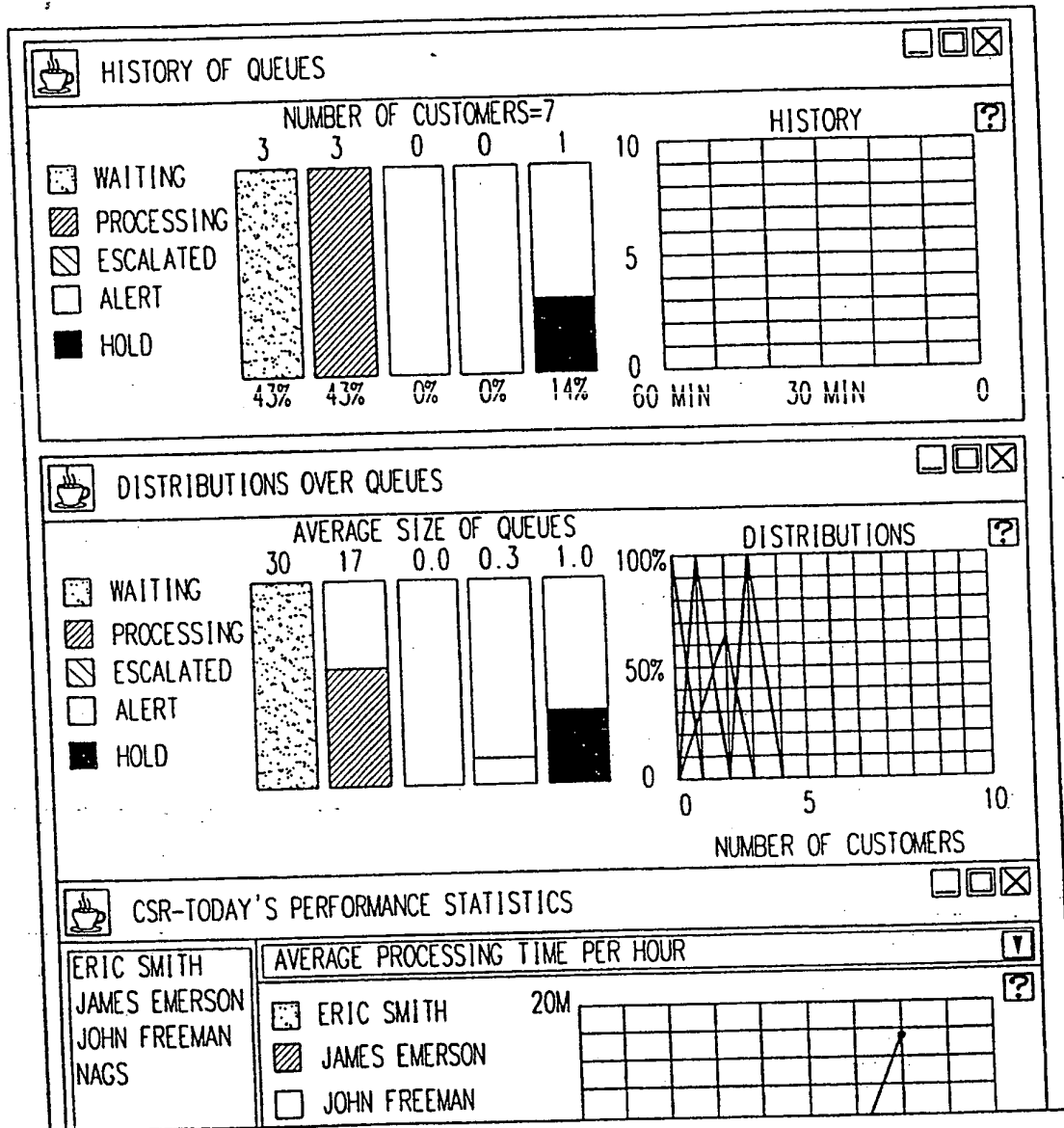


FIG.15B

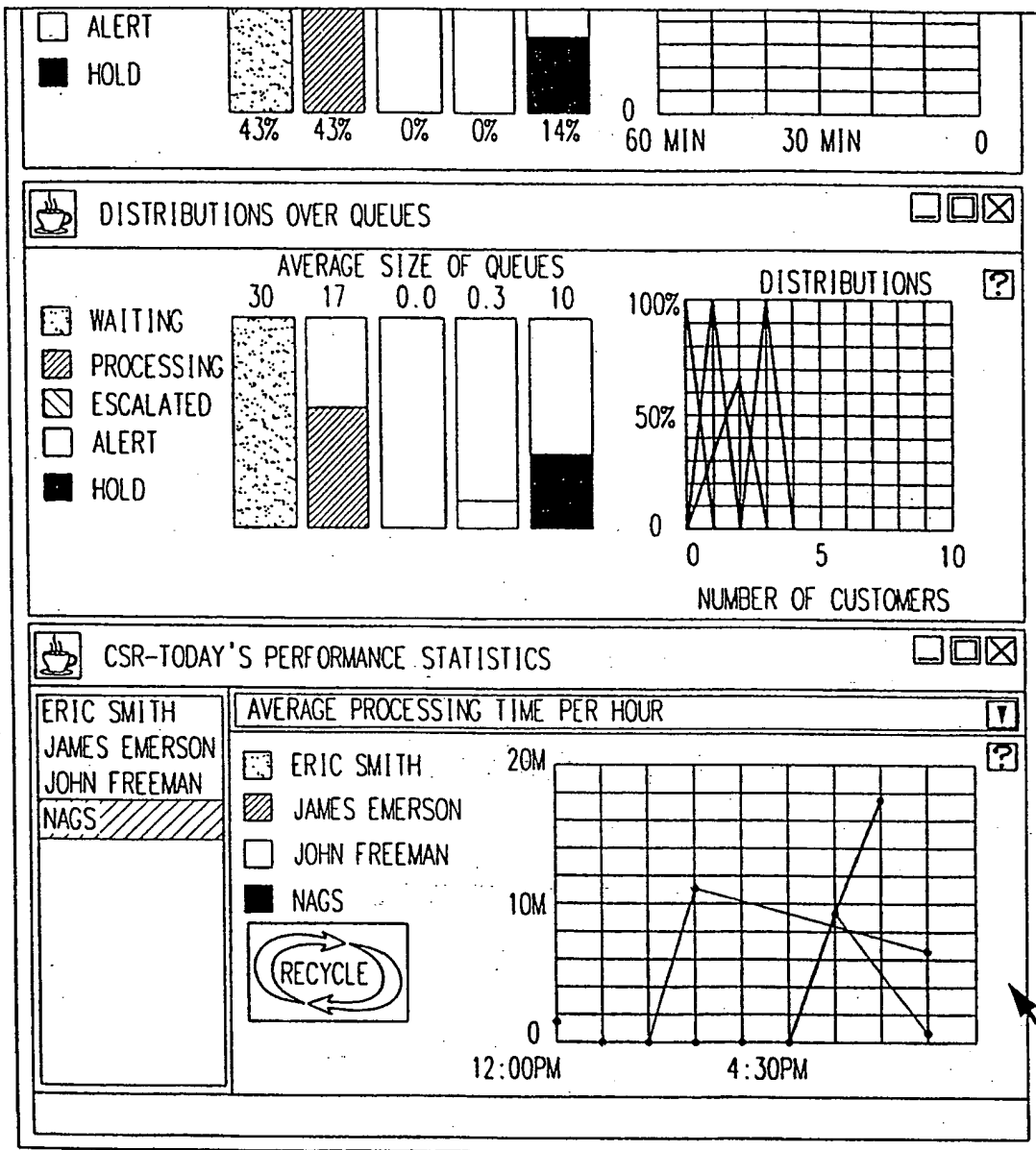


FIG. 15C

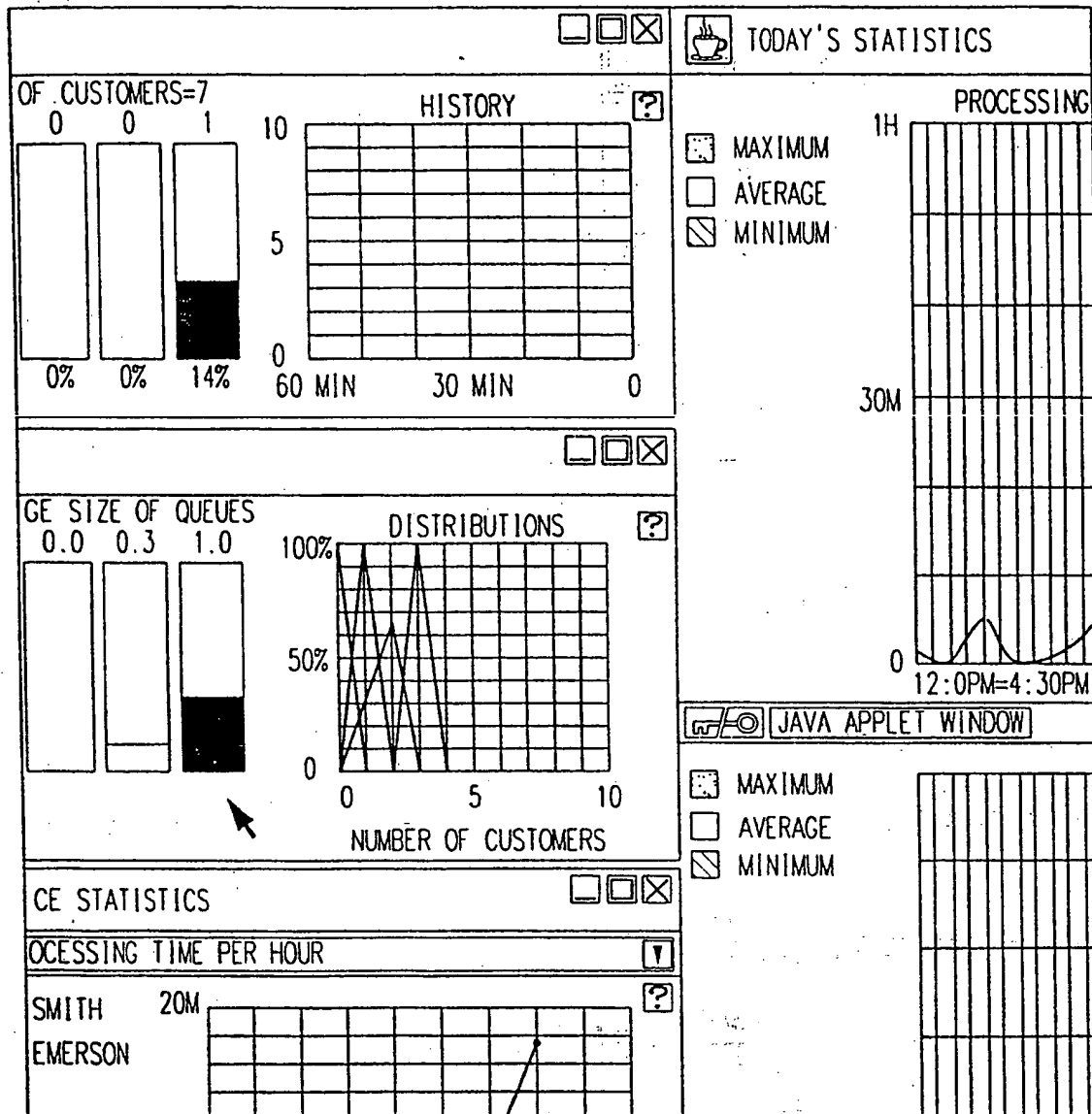


FIG. 15D

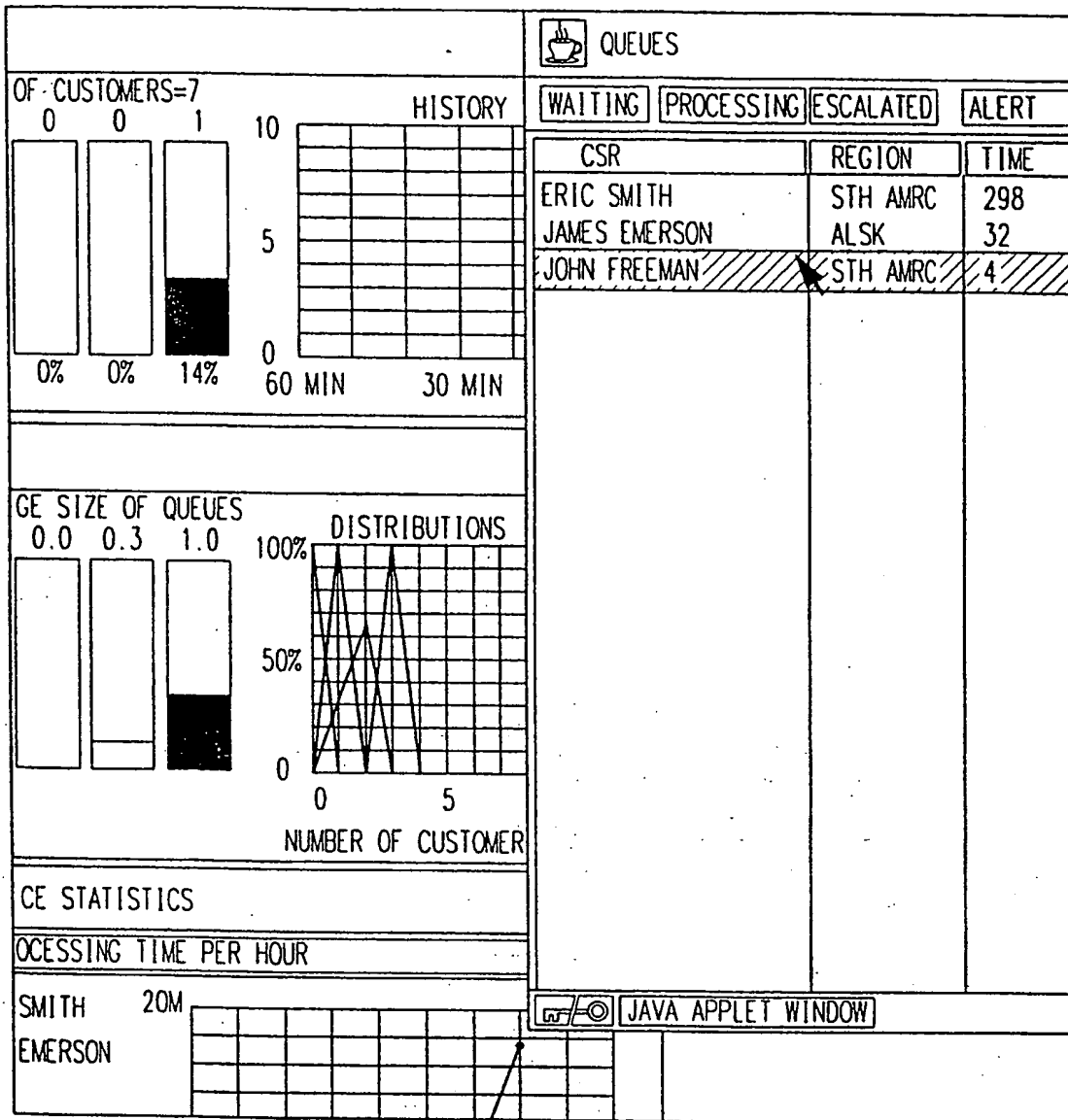


FIG. 15E

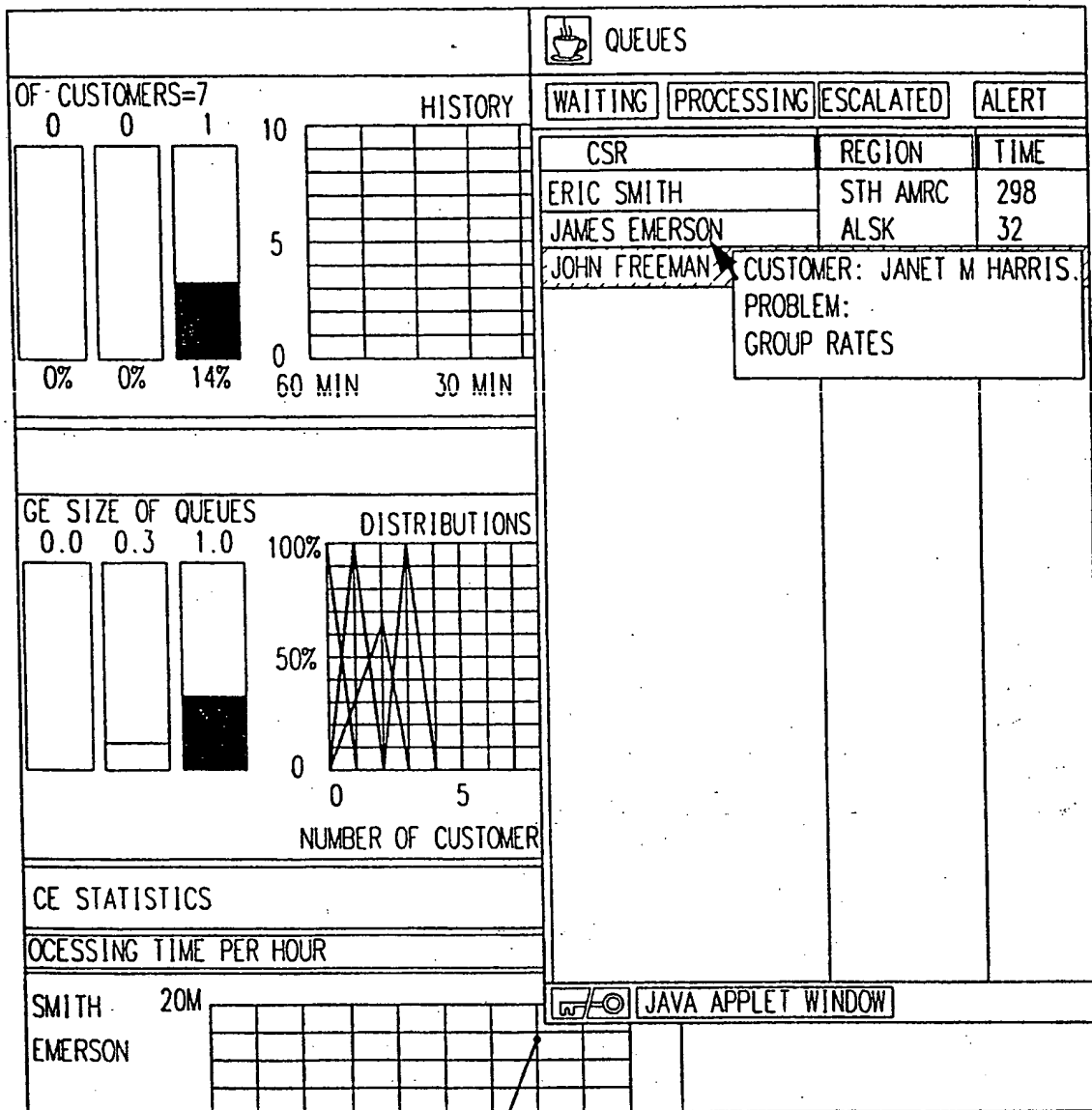


FIG. 15F

[illegible][illegible]

38/40

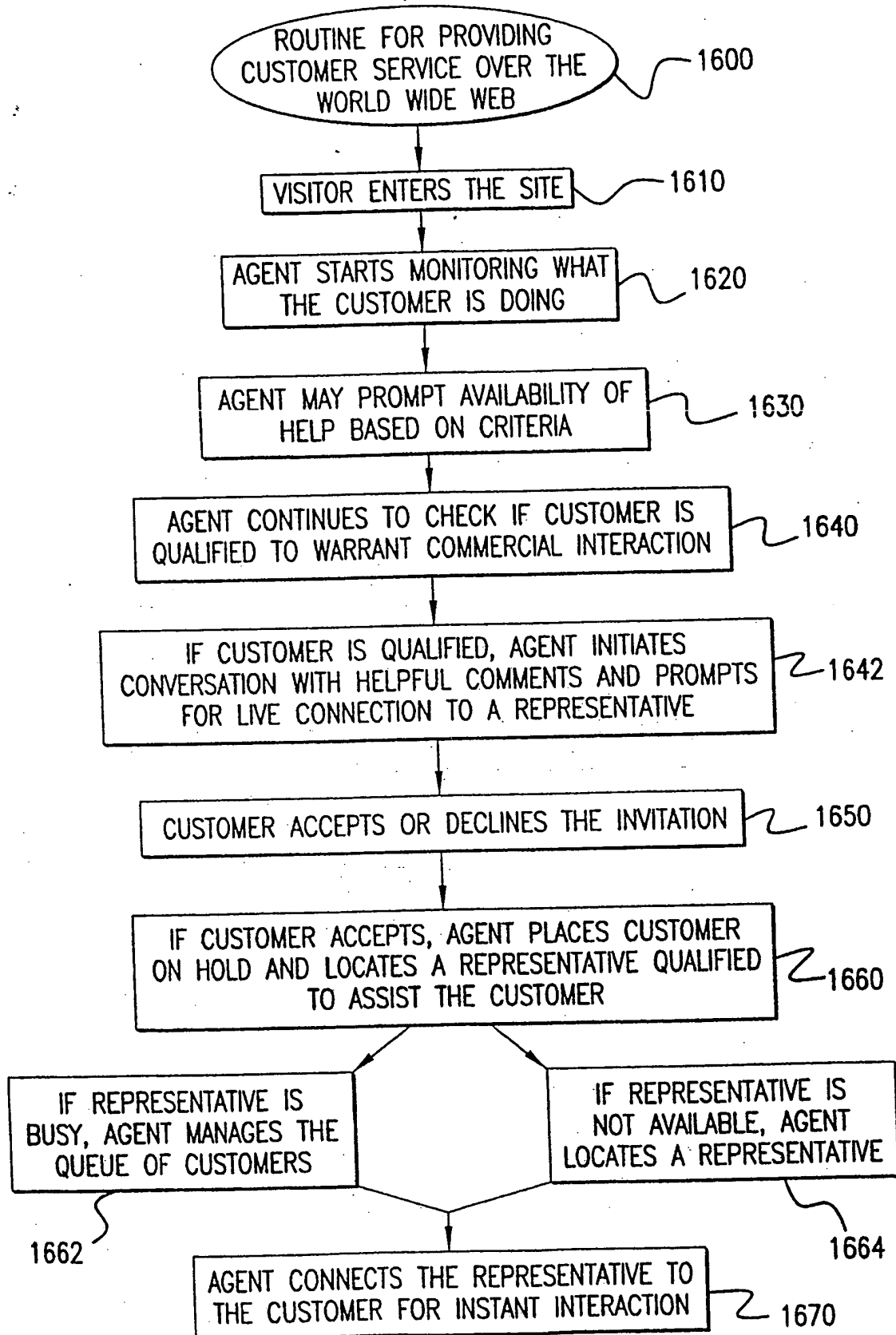


FIG. 16



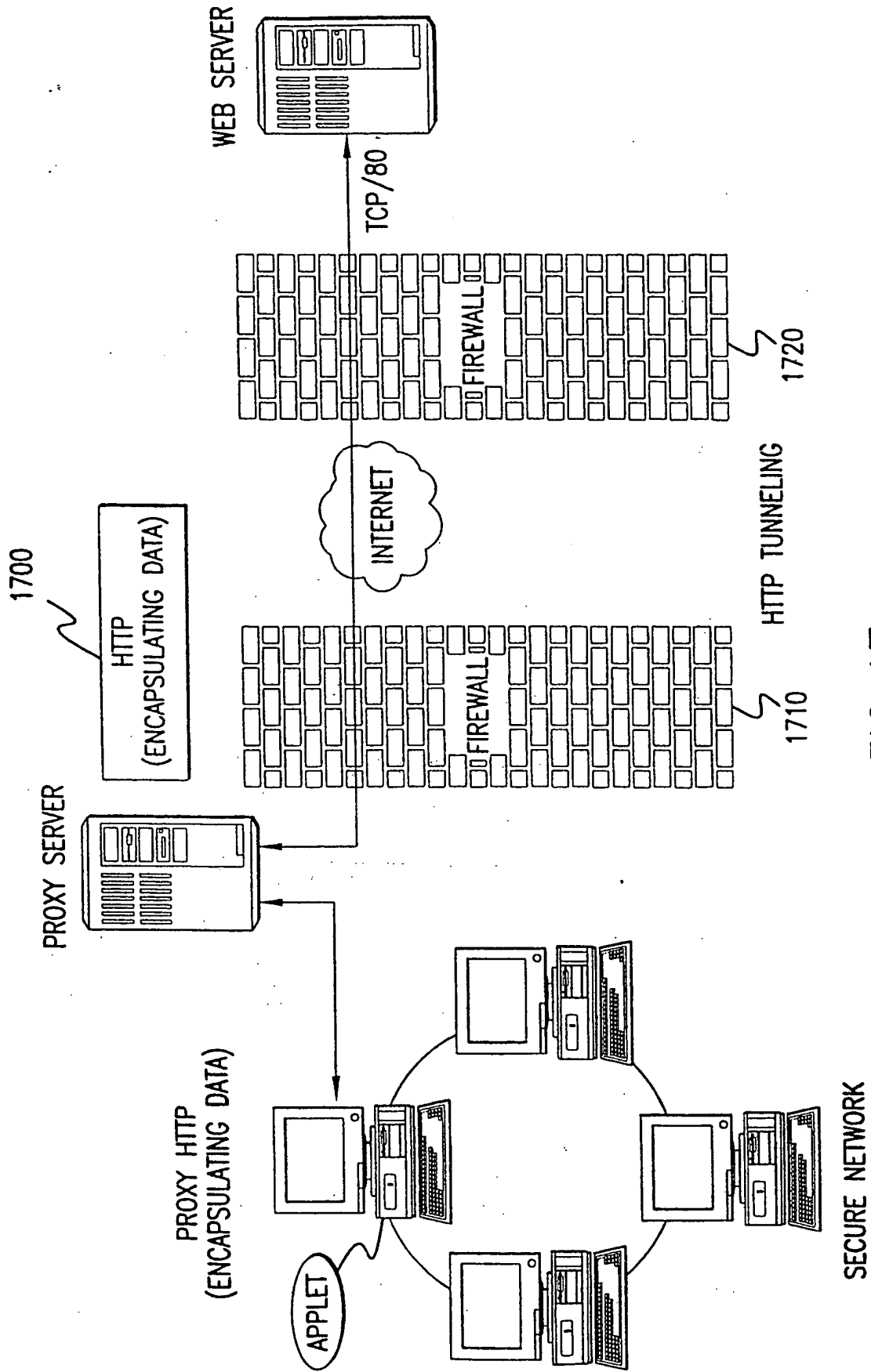


FIG.17

40/40

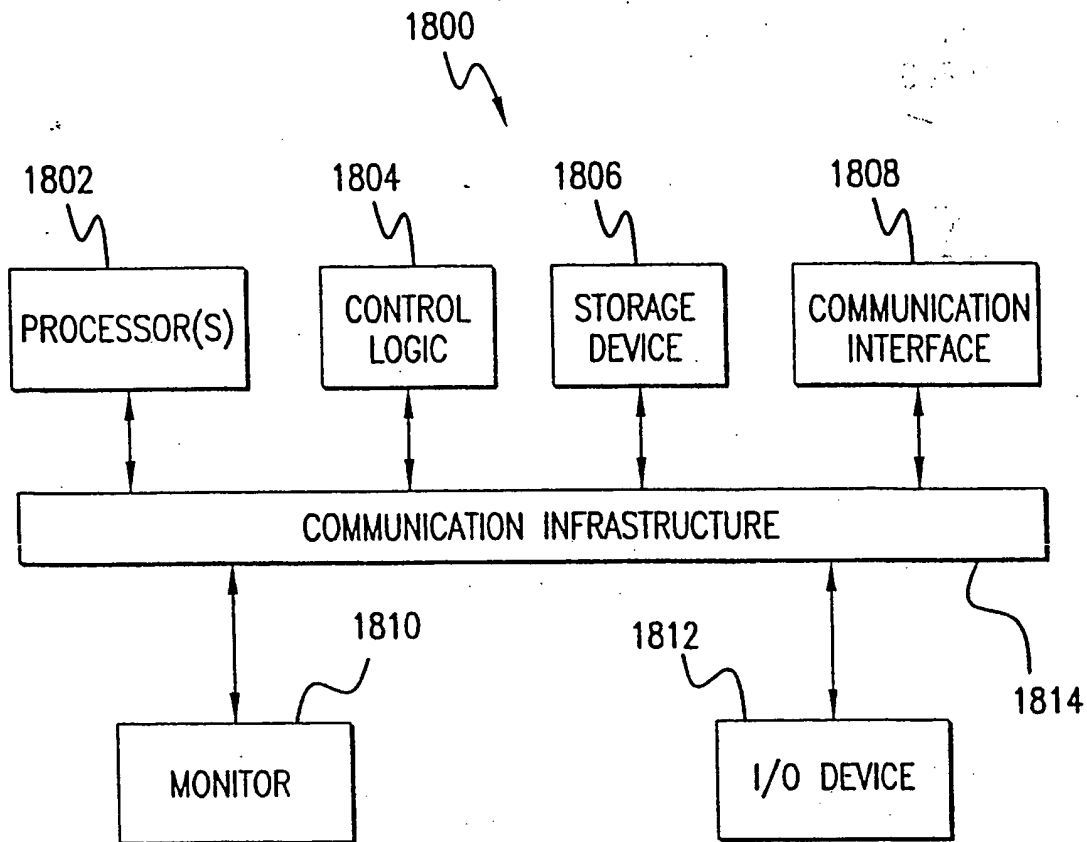


FIG. 18

PATENT  
 OFFICE  
 OF THE  
 UNITED STATES  
 DEPARTMENT OF  
 COMMERCE  
 DIVISION OF  
 PATENT AND  
 TRADEMARKS  
 WASHINGTON, D.C. 20530

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

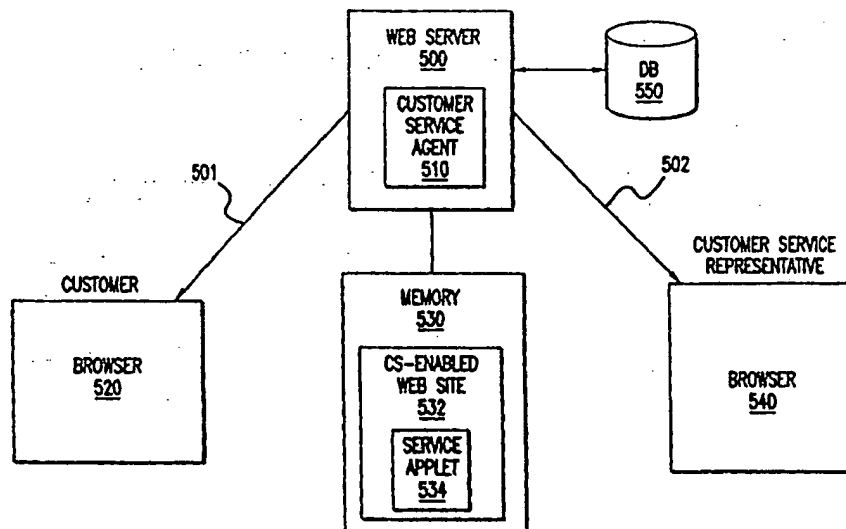
(51) International Patent Classification <sup>6</sup> : <b>G06F 17/30, 17/60</b>		A3	(11) International Publication Number: <b>WO 99/01826</b>
			(43) International Publication Date: 14 January 1999 (14.01.99)
(21) International Application Number: PCT/US98/11931		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 2 July 1998 (02.07.98)			
(30) Priority Data:			
60/052,779	2 July 1997 (02.07.97)	US	
60/052,252	11 July 1997 (11.07.97)	US	
60/085,812	18 May 1998 (18.05.98)	US	
09/106,011	29 June 1998 (29.06.98)	US	
(71) Applicant: BUSINESS EVOLUTION, INC. [US/US]; 4365 Route One, Princeton, NJ 08540 (US).		Published	
(72) Inventor: KANNAN, Pallipuram, V.; 1231 Town Court North, Lawrenceville, NJ 08648 (US).		With international search report.	
(74) Agents: LEE, Michael, Q. et al.; Sterne, Kessler, Goldstein & Fox P.L.L.C., Suite 600, 1100 New York Avenue, N.W., Washington, DC 20005-3934 (US).		Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.	
		(88) Date of publication of the international search report: 29 April 1999 (29.04.99)	

(54) Title: METHOD, SYSTEM AND COMPUTER PROGRAM PRODUCT FOR PROVIDING CUSTOMER SERVICE OVER THE WORLD-WIDE WEB

## (57) Abstract

A method, system, and computer program product provides live customer service between a customer and a CSR in real-time over the World Wide Web. Customer service for the Web is provided which is secure, private and responsive to particular customer needs. Queries sent by potential customers browsing a Web site are intelligently routed to appropriate customer service representatives. Potential customers browsing a Web site are also intelligently routed to appropriate customer service representatives. A memory coupled to a server stores a CS enabled Web site having a service applet. When a customer

browses the CS-enabled Web site, the service applet is downloaded and executes in a customer computer to support the live customer service. The server executes a customer service agent. The customer service agent enables a customer service window to be displayed by the customer browser. A CSR window is displayed on a browser of the CSR. The customer service agent and service applet determine whether a customer qualifies for live customer service. The level of customer service to be provided can be based at least upon one of the following: browsing data gathered while the customer browses the CS enabled Web site; a customer profile; and a policy of the CS enabled Web site. The customer service window can include a service dialog window and/or a service form. Polling allows a customer to be notified while the customer is browsing the Web that a CSR has chosen to respond to the query input by the customer. Messages are encapsulated/de-encapsulated in HyperText Transport Protocol (HTTP) to pass through Internet firewalls. Secure communication for Web-based customer service is provided. Communication between the customer and the CSR can be supervised and customer service performance can be tracked.



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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 G06F17/30 G06F17/60

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 97 42582 A (NETCAST COMMUNICATIONS CORP) 13 November 1997 see abstract; claims 1-26 see page 1, line 4 - page 3, line 20 see page 4, line 10 - page 14, line 35 ---	1-47
Y	EP 0 740 445 A (ROCKWELL INTERNATIONAL CORP) 30 October 1996 see abstract; figures 1-3 see column 1, line 5 - column 7, line 42; claims 1-24 --- -/--	1-47

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

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- \*E\* earlier document but published on or after the international filing date
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\*&\* document member of the same patent family

Date of the actual completion of the international search

15 October 1998

Date of mailing of the international search report

02.03.99

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Gardiner, A

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
2 Y	SCHILIT B N ET AL: "TeleWeb: loosely connected access to the World Wide Web" FIFTH INTERNATIONAL WORLD WIDE WEB CONFERENCE, PARIS, FRANCE, 6-10 MAY 1996, vol. 28, no. 7-11, pages 1431-1444, XP004018240 ISSN 0169-7552, Computer Networks and ISDN Systems, May 1996, Elsevier, Netherlands see abstract; figure 1 see page 1431, column 2, line 10 - page 1433, column 1, paragraph 3 see page 1434, column 1, paragraph 3 - column 2, line 4 see page 1437, column 1, paragraph 2 - page 1438, column 2, paragraph 1 see page 1441, column 1, paragraph 5 - page 1442, column 2, paragraph 2 ---	1-47
2 A	WAYNER P: "Noverra composes Epic for Java" BYTE (INTERNATIONAL EDITION), JULY 1997, MCGRAW-HILL, USA, vol. 22, no. 7, pages 122-123, XP002080613 ISSN 0360-5280 see the whole document ---	1-47
2 A	SAKAGAMI H ET AL: "Learning personal preferences on online newspaper articles from user behaviors" SIXTH INTERNATIONAL WORLD WIDE WEB CONFERENCE, vol. 29, no. 8-13, pages 1447-1455, XP004095339 ISSN 0169-7552, Computer Networks and ISDN Systems, Sept. 1997, Elsevier, Netherlands see abstract; figure 1 see page 1449, column 1, paragraph 3 - page 1450, column 1, paragraph 4 -----	1-47
2		

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 98/11931

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-47

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1-47

Methods for allowing communication between a user browsing the WWW and a service agent, the interaction optionally taking place in a window of the browser page currently being used.

2. Claim : 48

Locating and setting in conference, through text and audio supporting devices and text/audio translating devices, of persons.